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Rock Products

DEVOTED TO THE PRODUCTION AND SALE OF ROCK AND CLAY PRODUCTS.

Vol. II. LOUISVILLE, KY., SEPTEMBER, 1903. No. 6.

SNAP SHOTS AT DETROIT.

A Few Notes and Pointers Picked Up at the Detroit Meeting, August 3-5.

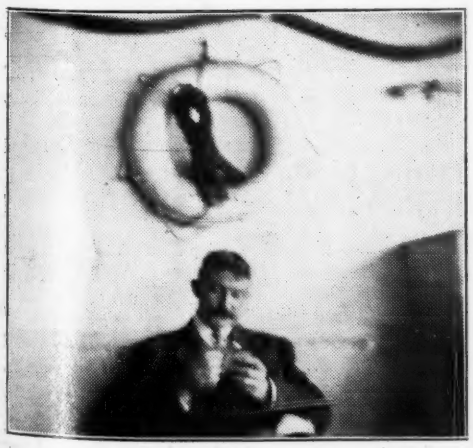
The American Sewer Pipe Crowd at Detroit.

The American Sewer Pipe Co.'s crowd got its picture taken all in a bunch, with the crowd facing the park adjacent to the Cadillac Hotel. The first man on the left is Mr. W. Wallace, of Cleveland, Ohio; the next one is J. O. Freeman, of Pittsburg, Western Sales Agent; the next is F. J. Van Allen, of Jackson, Mich., and the next is Mr. H. R. Breck, of Jackson, Mich. Mr. Breck is manager of the Michigan Sewer Pipe Co., and Mr. Van Allen is salesman. The end man is J. M. McCleve, of Toronto, Ohio., general superintendent of the various American Sewer Pipe Co.'s plants. This is a quintet of good jolly fellows, all of them hustlers. Mr. Van Allen is the only one who seems a little out out of training. He is a little bit too heavy for a sprinting match, but he promises to be in line before the next meeting.

The kodak was worked on a bunch of hard wall plaster men, in the park by the Cadillac, the result of which is shown in this issue. S. S. Love, of New Castle, Pa., is shown on the left, with Lincoln E. Fishack, of Toledo, Ohio, and H. E. Dingley, Syracuse, N. Y., president of the Plaster Association. Next is Prophet John W. Elcessor, of Fittsburg, Pa.; next James Leenhouts, Grand Rapids, Mich., with Alex Forester, of Cleveland, on the extreme right. If we had a list of the stories told, John's prophecies, Mr. Love's quick puns, and the discussions of ideas and methods in use in the production of wall plaster, by this crowd. during the meeting, we would have a good-sized book.

A bunch of good fellows were caught taking solid comfort on the "Owana." Harry S. West, of Toledo, standing, and Frank C. Bogk, of Milwaukee, Wis., sitting. The appearance of pleasure and contentment shown by this part of the crowd was characteristic of the entire party.

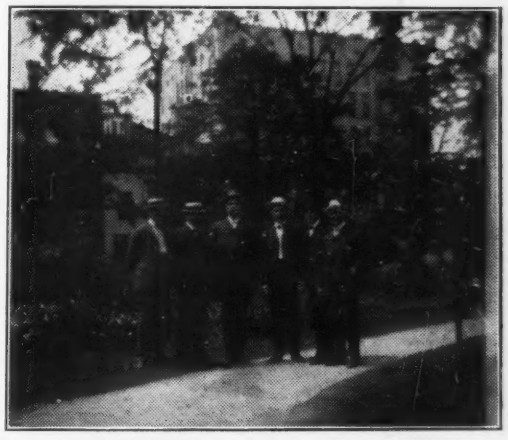
Taking solid comfort on board the steamer for Tashmoo.



A. W. Calkins, of Detroit, taking a moments rest on board the steamer to Tashmoo.

Mr. A. W. Calkins, of Detroit, the active man on the entertainment committee, slipped to a secluded spot on the Owana for a few minutes' rest, and may be he does not know that he was shot at with a camera. The picture was taken while he was counting tickets, much against his desire. Unless he is like the ladies, he says just the opposite to what he means. Owing to Mr. Calkins' liberal proportions, the ROCK PRODUCTS' representative was uneasy for several hours after the picture was taken, for fear he and the camera would both be dumped overboard.

No bunch of pictures of a meeting like this that had as many fine looking ladies along would be complete without one of the ladies, so the ladies were lined up along the landing of Tashmoo park. This is the only time on the trip when the ladies were all together. The ladies were so popular and the young men so attentive that the only possible outcome of such an effort would be small and uninteresting groups distributed about various parts of the boat.



A bunch of the Plaster Boys who were in attendance at Detroit.

If there is any retail dealer who thinks it is a cinch to buy Portland cement at a reduced price, notwithstanding the conditions of the market 30 days ago, he ought to take another look at the cement men in the picture printed in the last issue. You can take Wade, Fraser, Peverley, Prestiss and Affleck for length, and for the truth of the old saying that precious goods are done up in small packages, you have Robert Lesley, of Philadelphia. Any one who heard him talk on cement the other day could well come a thousand miles to hear him. Then we have Jones, Cox and Woods, of Chicago, Stradley, of Philadelphia, who are artists in this line—but it would take a column to tell all we know about the cement men who were present at this meeting. That is Becker and his right hand bower standing in the front row. Becker looks the worse for the sun. Then we have Joe Loughman. It looks like a family gathering with our friend Joe, who has been on earth so long that everybody in the business knows him.

One of the visitors at the meeting was George W. Hotchkiss, secretary of the Illinois Retail Lumber

(*Continued on Page 9.*)

A snap shot of the Ladies that were at Detroit.

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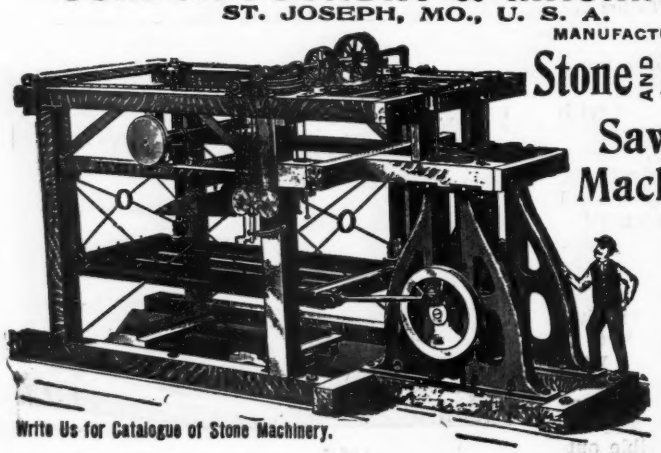

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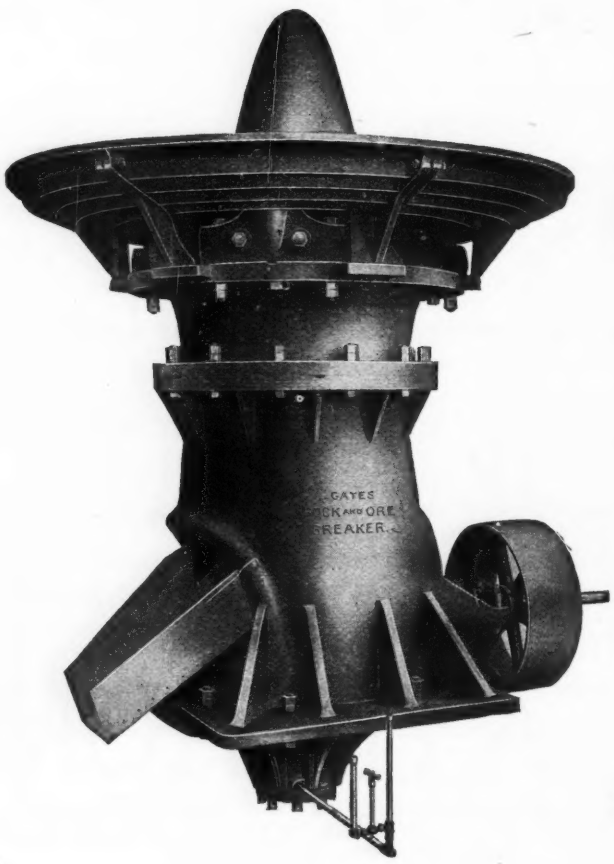

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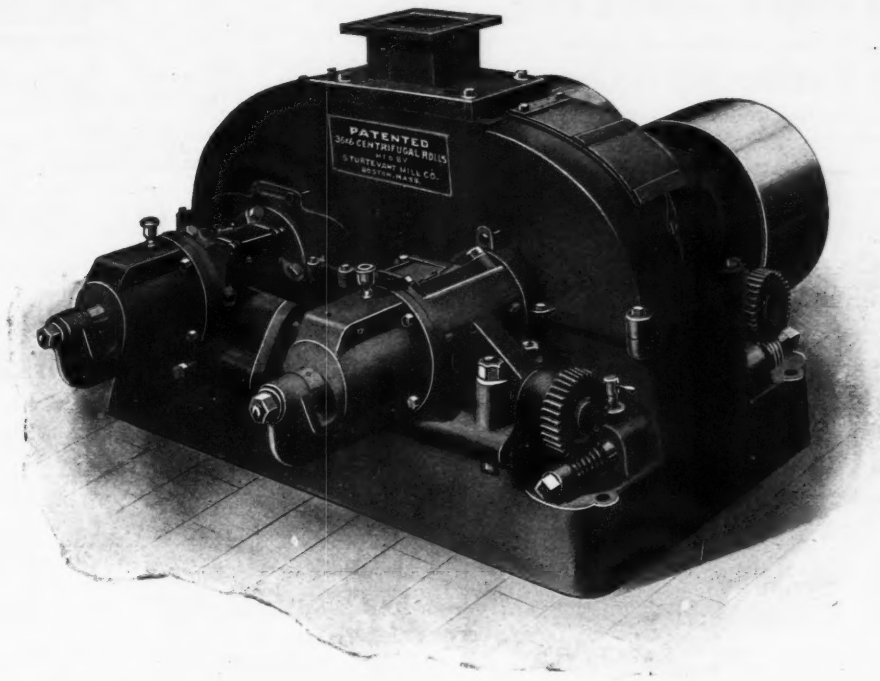

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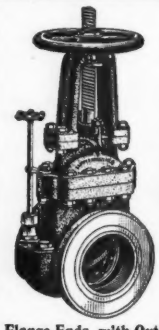

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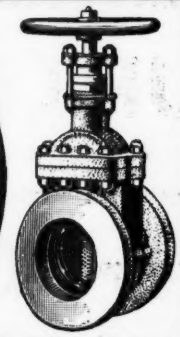

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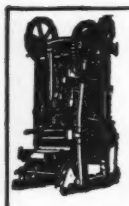

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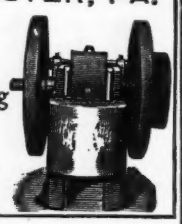

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LOUISVILLE, KY., SEPTEMBER, 1903.

The Imports of the Year,

The statistics and reports are now all in for the fiscal year ending June 30, covering imports and exports, and we get from the records of the Bureau of Statistics the business of the fiscal year in the rock products line. The United States Geological Survey is also now distributing information in regard to the output and general conditions in the various lines of rock products for the year 1902 as compared to former years. From these reports we are able to get an outline of the progress of business and figures on the volume being done in the various lines.

The importations of cement for the year ending June 30, 1903, including Roman, Portland and other hydraulic cement, was 1,110,422,761 pounds, valued at $3,547,914.00. This shows an enormous gain over 1902, for the total value of cement imported during that year was only $1,478,452.00.

1901 was quite a large year, there being imported during that year $2,198,891.00 worth of cement. Of the cement imported during the year ending June 30, 1903, Germany furnished the bulk. Importations from Germany aggregated for the year $2,278,681.00, and next to Germany came Belgium, which sent us cement during the year to the amount of $1,033,532.00. The United Kingdom sent $152,963.00 worth of cement; British North America $10,761.00, while France and other parts of Europe made up the balance of the total. Against these imports, our exports of cement only amounted during the year ending June 30, 1902, to 227,272 barrels, valued at $419,361.00.

While these import figures on cement seem large, and are, in fact, this must not be taken as an indication that there is room for greater expansion in the cement industry here to take care of this trade, because while that cement has been coming over here, there has been erected additional plant capacity enough to more than produce this amount. In fact, the home cement producing capacity now, according to the best figures obtained, is able to take care of the normal consumption of this country.

We imported marble for the year ending June 30, 1903, to the value of $1,513,813.00, and these figures tell of a steady growth in marble imports, notwithstanding the great development at home. The importations in 1901 were $1,024,687.00; in 1902, $1,408,855.00, and a comparison of these figures with the imports for this year tell the story.

Of stone other than marble imported, the records for the year show a value of $239,967.00, against $232,533.00, the previous year, and $251,915.00 for 1901, from which it is evident that the other classes of stone have not been gaining of late years.

In crude asphaltum or bitumen there was imported during the year 149,147 tons, valued at $462,843.00, which is a gain over 1902, but is a loss in value over 1901. The imports for 1901 were 136,440 tons, valued at $497,194.00, while in 1902 there was shipped only 119,625 tons, valued at $428,877.00.

The Production of Petroleum for 1902.

The United States Geological Survey reports on the production of petroleum for 1902, say that the production of crude petroleum was greater than during any previous year. There was a slight increase in the Appalachian field, and a slight decrease in Lima-Indiana field. Prices were less than any other year, and the exports of petroleum were smaller than in 1901.

The total production in the United States of crude petroleum in 1902 was 80,894,590 barrels, as against 69,389,194 barrels in 1901, an increase of 11,505,396 barrels, or 16.5 per cent over that of 1901, and of 27 per cent. over that of 1900. The greatest portion of the increase in 1902 came from Texas and California, the gain being 5,830,994 barrels, or 132.7 per cent. for Texas, and 5,187,518 barrels, or 59 per cent. for California, as compared with their respective productions in 1901. The increase in Indiana in 1902 was 1,723,810 barrels, or about 30 per cent. over that of 1901. Louisiana produced for the first time in 1902, the production being 548,617 barrels, The increase in the production of Kansas was 152,598 barrels, or about 85 per cent. over 1901. Kentucky and Tennessee increased their production in 1902 by 47,799 barrels, or nearly 35 per cent. Indian Territory increased 27,000 barrels and Wyoming 850 barrels as compared with 1901.

The total number of wells completed in the United States in 1902 was about 15,800. At an average cost of $1,500.00 each, these wells represent an investment of $23,700,000.00 or about 34 per cent. of the gross receipts for all the petroleum produced in 1902.

The exports of petroleum and its products exceeded 1,000,000,000 gallons in 1902, for the second time in the history of the industry, the number of gallons exported being 1,064,233,601, a smaller total exportation by nearly 15,000,000 gallons than in 1901.

The Production of Abrasive Material in 1902.

The production of oilstones and whetstones shows a decided increase in 1902, the value of which amounted to $219,172.00, an increase of $60,872.00 over $158,300.00 the production in 1901. This production was confined to the States of Arkansas, Michigan, Indiana, Ohio and Kentucky, in which the material used was sandstone, and New Hampshire and Vermont, in which the material used was a quartz-schist. In 1902, the imports amounted to $56,456.00, consisting principally of razor hones from Belgium and Germany, and of "Turkey" oil stones from France and Italy.

The States producing grindstones in 1902 were Michigan, Ohio, West Virginia and New York, but by far the largest quantity was from Ohio. The total value of all kinds of grindstones produced in 1902 was $656,832.00, or $76,129.00, greater than their value in 1901, which was $580,703.00. The value of the imports of grindstones in 1902 was $76,906.00, the value in 1901 having been $88,871.00, and in 1900, $92,581.00.

The production of buhrstones in 1902 was valued at $57,451.00, about the same as that of 1901. The production of 1902 was divided as follows: New York, $37,213.00; Pennsylvania, $1,978.00; Virginia, $11,435.00; North Carolina and Vermont, $6,825.00. The imports of buhrstones in 1902, amounted to only $16,158.00, the smallest importation recorded.

There was no production of corundum in the United States in 1902 except of the emery variety, and the production of emery was confined to the same localities as for 1901—the mines at Chester, Massachusetts, and Peekskill, New York. The total production during 1902 was 3,497 tons, valued at $95,135.00, a decrease of 808 tons in quantity, and of $50,905.00 in value as compared with the production of 4,305 tons, valued at $146,040.00 in 1901. The imports of corundum and emery amounted altogether in value to $214,842.00 in 1902, as compared with the production in 1901, viz.: $294,999.00, a decrease of over $80,000.00 in value.

Production of Asbestos in 1902.

The production of asbestos in the United States in 1902, according to the report of Dr. Joseph Hyde Pratt to the United States Geological Survey, now in the press, was 1005 short tons, valued at $16,200.00, chiefly from the mines at Sall Mountain, White County, Ga. The production of asbestos in the United States has never been over 1200 tons per annum,, and when these figures are compared with the amount of asbestos imported, which is almost entirely of the chrysotile variety, it will be appreciated how large is the demand for this variety. The total value of the imports of asbestos in 1902 was $762,432.00 as compared with $691,828.00 in 1901, with $355,951.00 in 1900, and with $312,068.00 in 1899—an increase of over 100 per cent. in the four years. Nearly all the asbestos imported in the United States is obtained from the Province of Quebec, Canada. The value of the Canadian production in 1902 was $1,148,319.00 as compared with $1,186,434.00 in 1901, with $763,431.00 in 1900, and with $485,849.00 in 1899, an increase of about 240 per cent. in the four years.

Production of Fluorspar in 1902.

There was a very large increase in the production of fluorspar in 1902 over that of 1901, says Dr. Joseph Hyde Pratt in his report to the United States Geological Survey, which was partly due to its increased use for metallurgical purposes. The production in 1902 was 48,018 short tons, valued at $271,814.00, as compared with 19,586 tons, valued at $113,803.00 in 1901. Of this production 43,310 short tons, valued at $224,814.00 are reported to have been sold in the crude state as compared with 15,450 short tons, valued at $77,500.00, in 1901, an increase of 27,860 tons in quantity and of $147,314.00 in value. There was an increase in price of both the crude and the ground fluorspar, the average price for the crude being $5.19 per ton, an increase of 19 cents over the 1901 price, and for the ground the price averaged $9.98, an increase of 76 cents over the 1901 price.

Besides the above production, there were 3,520 tons of fluorspar mined but not put on the market.

Cryolite, used in the manufacture of aluminum and sodium salts, is imported from Greenland. The imports for 1902 amounted to 6188 long tons, valued at $85,650.00, as compared with 5383 tons, valued at $70,886.00 in 1901, and with 5437 tons in 1900.

Lime.

The National Lime Manufacturers' Association.

Meets Semi-Annually.

A. NEWTON, Chicago, Ill.,.....President
PETER MARTIN, Huntington, Ind.,.....First Vice President
W. B. HILL, Kansas City, Mo.,.....Second Vice President
CHAS. WARNER, Wilmington, Del.,...Third Vice President
C. W. S. COBB, St. Louis, Mo.,.....Treasurer
E. H. DEFEBAUGH, Louisville, Ky.,..... .Secretary

Official Organ, ROCK PRODUCTS.

The Mason City (Iowa) Lime and Cement Co. has been erecting additions to its plant.

John W. Elcessor, of Braddock, Pa., has put in a prepared lime plant in order to furnish their plaster concerns with material.

The Rockbridge Lime and Stone Co., Lexington, Va., is getting in shape to put a patented process fertilizer lime on the market.

Bromell, Schmidt & Steacy Co., York, Pa., say that they are erecting a new large lime plant which will b eready for operation October 1.

The Van Fleet Lime and Supply Co., of Carey, Ohio, has changed its name to the National Lime and Stone Co. W. W. Edwards is president of the company.

The Flagstaff Lime Co. is a new industry at Flagstaff, Arizona, which is manufacturing lime out of marble. The manager of the company is Henry Deitzman.

A meeting of the Central Ohio Lime and Stone Co., Marion, Ohio, was held during the past month and officers elected as follows: Henry Ackerman, president; L. V. Uncapher, secretary, and J. W. Thew, treasurer. This company is said to be progressing nicely with the work at its plant North of the Marion.

Thomas D. Cone, of the National New Process Lime Co., 39-41 Cortlandt Street, New York City, says he is about to realize his hopes in manufacturing his new process lime as cheap as dry slacked limes are now manufactured, thereby giving consumers properly hydrated lime at a reduced price. He promises to tell us all about it a little later.

The Thomas N. Lee Co., Texas, Md., report a heavy business of lime, especially from wood-burned lime for plastering. Prices on building lime, they say, are not very satisfactory as some of the plasterers seem timid about asking fair prices. This company also ship out extensive amounts of white sand, for which they claim an excellent quality for plastering, stucco work and for masonry.

The Cream City Lime Co. has been incorporated at Milwaukee, Wis., with a capital stock of $25,000.00, and has taken over the lime works at Germantown, 25 miles Northwest of Milwaukee, owned by the Henry Herman Estate. This plant has not been operated to its full capacity for several years, but it is said the new owners will push the business. The officers of the company are: G. A. Mace, president; Chris Sarnow, vice president; Edward F. Whitnall, secretary-treasurer.

There has been a reorganization of the Cook & Brown Lime Co., of Oshkosh, Wis., R. C. Brown purchasing the interest of Mr. Cook, F. E. Waite and O. T. Waite, and becoming president of the company under the reorganization; B. F. Cook, vice president; W. H. Carter, secretary, and R. C. Brown, Jr., treasurer. This concern is one of the oldest business enterprises in the town of Oshkosh, and its history dates back to the forming of the J. A. Day Co. in 1860.

Limestone Quarries and Lime Plants of the Wallace Stone and Lime Co., Bay Port, Mich.

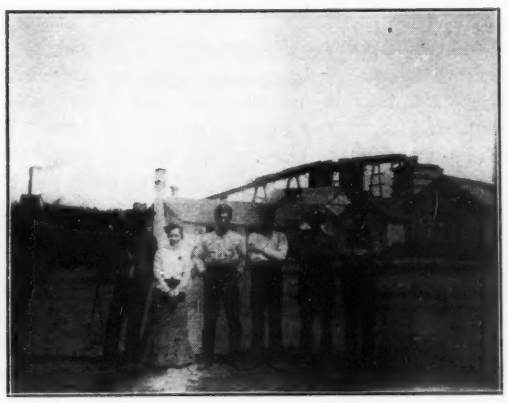
The limestone found at this plant is one of great hardness and shows in some layers a crushing strength of 26,110 pounds to the square inch. The average of twenty-five tests gave 14,813 pounds. This is a higher crushing strength than most marbles give.

This stone has been much used in Northern Michigan for road building and other construction work. When laid in the wall the stone has the appearance of flint. Owing to its hardness and consequent sharp corners it would be an excellent basis for concrete work. The analyses of the building stone is 61.52 per cent. carbonate of lime or (calcium), carbonate of magnesium 14.5, sand 20.85, clay 2.4.

This is practically what may be called shallow quarrying, the depth to which the stone is worked being from 8 to 10 feet only. The face is made of eight strata of stone varying from 6 inches to 2 feet 6 inches in thickness.

The first three feet of stone only is adapted to the manufacture of lime. The product is a grey lime. The grey color is due to the small amounts of silica and aluminum present. There are three kilns in the plant, but as a general rule the operation of one kiln is sufficient to supply the local demand. Wood is the fuel used in burning lime.

As the quarries are shallow the process of handling the stone from the quarry to the car is a very simple system by the use of special wagons constructed for convenience for loading and unloading. There is operated in connection with the quarries, two crushing plants with a Gates crusher in each.



Plant and Office Force of the Wallace Stone and Lime Co., Bay Port, Mich.

The Use of Lime in Soap Making.

Many of the members of the lime trade are probably already aware of the use of lime in making soap, and some may be fully acquainted with all the details of this use, but still there are others, and it does us good to go into these matters occasionally; consequently we quote the following from a report of the State Geologist of New York in his report on the lime and cement industries of that State:

"In the manufacture of soap slaked lime is mixed with carbonate of soda to produce caustic soda. The two are mixed with water, and boiled with steam, the resulting carbonate of lime being separated by settling.

"Lime is also used in the manufacture of soft soap, in that the pearlash of commerce is converted into caustic potash by means of fresh lime. In the manufacture of stearin for candles, ordinary tallow is boiled in wooden vats by high pressure steam with slaked lime for several hours, by which lime soap is formed. This is transferred to another vessel and treated with dilute sulphuric acid, which in combining with the lime forms a sulphate, which deposits while the fatty acids rise to the surface.

"In the manufacture of ball soda or black ash, salt cake, limestone and coal are mixed together in a reverberatory furnace. The limestone is sometimes soft and chalk-like. Good limestone should have 98 per cent. of carbonate of lime.

"Palm oils and tallow are the two chief fats bleached by the soapmaker. The color of the latter is sometimes removed by boiling it in lead-lined tanks with a solution of chloride of lime. In the saponification of tallow the latter is mixed with good slaked lime into a thin cream with water. This is then inclosed in a suitable vessel, and the whole boiled with steam and agitated for three hours. The action of the lime on the tallow decomposes it, glycerin being set free, while calcium serate and cleate are formed. The formation of these salts, when mixed together, constitutes an insoluble soap, which is technically called rock, and facilitates the subsequent separation of the solid and liquid constituents of the tallow."

"There Won't Be No Core."

If there is anybody pushing lime more industrially than Charles Warner, of the Charles Warner Co., Wilmington, Del., we don't know of it, for he is everlastingly at it, and always springing something new. One of the latest things in the advertising line is a cartoon entitled "There won't be no Core." It is quite a lively picture and the wrapper around this picture says in explanation:

"Take a lump of Cedar Hollow Lime—nay take a carload; slake it out—'There won't be no core.' The finest grain, smoothest, richest paste you ever saw. Examine it carefully—'There won't be no cinder.' Analyze it, 'There won't be no silica.' Test it as you may, you will find it the most uniformly prepared lime and from the purest of stone it has ever been man's good fortune to discover. This then is the foundation for 'Limoid' and that the product is well worthy of the parent, we ask you to prove."

They are also sending out a new booklet on ground lime and limoid for agricultural purposes, which contains a very complete description of the effects of lime together with instructions for its use on land.

Some Lime Fertilizing Advice.

The Ohio Lime Co., Toledo, Ohio, is one of the up-to-daters that is sending out circulars to farmers on agricultural lime, from which, for the good of the cause, we quote the following:

"Lime is not considered by experts to be a fertilizer in the sense that other fertilizers are, in that it does not act as a stimulant, or plant food, producing a temporary, luxuriant growth, but rather as a solvent, releasing the plant foods in the soil, overcoming its acidity, and enriching it. Black muck or stiff clay land will be made loamy and productive by use of lime, while for 'sour' land it is its only remedy. For all other kinds of soil, we would advise the use of manure and other fertilizers along with lime.

"The success of the late experiments in the use of lime made by the Agricultural Experiment Stations of the different States should recommend it to all requiring a fertilizer.

"There is so much difference in land, even on adjoining farms, that to give any definite information as to the amount to use per acre, would be misleading to a majority of our patrons. We believe, however, we are safe in saying where land requires liming at all there should be used not less than 500 pounds per acre and 1,000 pounds would be better.

"Amount of lime required greatly depends upon the condition of the land and the crops to be raised thereon. Where the land is black muck, containing a large per cent. of vegetable mold, a light top dressing of lime each year is beneficial. The crops of celery and onions have been more than doubled on this land by judicious use of lime. However, this kind of land should first have one good, heavy dressing of lime.

"Heavy and sticky clay and sour land also require a heavy dressing. Land upon which sorrel, mullen and redtop grow and which is generally considered worthless, can be made valuable and productive by a heavy dressing of lime. Such land can be made to raise large and heavy crops of clover and timothy. To obtain the best results, the use of manure and other fertilizer should be continued.

"The time to lime, of course, also depends upon the crop to be raised. Generally just before the crop is to be planted and when the ground is being prepared. Where Indian corn, rye and millet are to be planted, the lime should be drilled or harrowed into the ground. Upon many crops it can be used as a top dressing. Clover and timothy, on wheat or oats stubbles are examples.

"Upon sod or heavily manured land it should be plowed in with the sod or manure. When land which requires a heavy application of lime is to be plowed in the spring for corn, the lime can be spread on the surface at any favorable time during the preceding winter."

For the Retailer.

The National Builders' Supply Association.

Meets Semi-Annually.

JOHN A. KLING, Cleveland.....President
C. E. McCAMMON, Cincinnati, Ohio.....Vice President
GORDON WILLIS, St. Louis, Mo.,.....Vice President
J. N. THAYER, Erie, Pennsylvania.....Treasurer
RICHARD KIND, Toledo, Ohio.....Secretary

Official Organ, ROCK PRODUCTS.

Some Points on Cement Using.

A retail dealer in building material can not keep himself too well posted on the material that he handles, for he is frequently called on by a customer to answer questions about it that may cover any or all of the ground between the manufacturer of the product from the raw material to the manner of its application for any specific use. Of course there will be questions asked that it is out of reason to expect a dealer to answer clearly; questions which would require a man to spend practically all of his time in study and experiments to answer, but there are many things that a dealer may keep on tap in his knowledge box by being ordinarily observant, and by reading proper literature, and these things make up a valuable business asset.

To furnish enlightenment of this kind, through an exchange of ideas by men in the trade, and the publication of editorial suggestions, etc., is the purpose of this department in ROCK PRODUCTS and we want dealers to make use of these columns freely for that purpose. Manufacturers, too, are invited to make suggestions, for the manufacturer is interested in furthering business along with the dealer, and he can frequently supply information that is valuable in regard to the use of his material.

Instructions for Using Portland Cement.

As an example in this line, we have some instructions in regard to the use of cement, sent out by the Houston Brothers Co., Pittsburg, Pa., which were compiled by them in answer to many requests. These specifications, they say, embody the result of many years of research on their part, and they should therefore be reliable and valuable. In fact we are so favorably impressed with their general value to the trade that we are reproducing them herewith. The specifications are on the basis of the use of high grade Vulcanite Portland cement, so in making application of this information it should be borne in mind that this cement or its equivalent should be used. The specifications, minus the repetition of the word "Vulcanite," which is properly mentioned in this preface, are as follows:

Character of Materials to be Used With Cement.

Sand should be clean, coarse and sharp. A loamy sand should be avoided; it will give bad results and retard the set. River gravel or bank gravel, if free from loam, or crushed stone if clean can be used, and should vary from one-quarter to two inches in size. Care must be taken if work is being done during the winter months. The material must be kept from freezing, and during such times, warm instead of cold water is preferable for mixing concrete.

How to Mix Cement.

Mix cement and sand thoroughly together dry until it shows a uniform color. It is desirable to have a large wooden or sheet-iron platform for this purpose, mixing the sand and cement in one pile and having the broken stone in another pile with a crater or hole pulled in the center. Sprinkle the gravel or stone lightly with water and then shovel the dry mixture of sand and cement in the crater. Then turn rapidly with shovels until all the material is thoroughly mixed, the oftener the better. At the same time, add water lightly until you have sufficient to bind the material together so that when handled by a shovel, it will not crumble or fall off, and when tamped into concrete, water will come to the surface. The concensus of opinion is that an excess of water is preferable than otherwise. When large quantities of concrete are required, concrete mixers are more desirable than hand work, both for better work and quicker mixing and a saving in cost.

Proportions for Concrete Work.

Varying proportions of sand, gravel or stone can be mixed with one part of Portland cement and give good results, but for all ordinary purposes, foundations or sidewalks, mill or machinery foundations, house foundations, retaining walls, cisterns, reservoirs, etc., one part of Portland cement, two parts sand and five parts gravel or broken stone; or, one part cement, three parts sand and seven parts gravel or broken stone, will give excellent results. If absolutely water tight work is required, an excess of water is found to be preferable, as in setting the voids will be more easily filled. Never mix large quantities; only as much as can be put in place within fifteen or twenty minutes after mixing. Portland cement will give good results when mixed in proportions of one part cement, three parts sand and seven parts gravel or broken stone, and if good gravel can be had more economically, you can use one part cement, three parts sand and eight to ten parts gravel. Concrete properly made in this manner will be strong enough to break the stone or gravel and will require dynamite to blast it out. Theoretically, broken stone is preferable to gravel, but in actual practice, gravel gives the best results and is more economical. One barrel of cement is sufficient to make a cubic yard of concrete.

How to Apply the Mixture.

See that the mixture is rammed well into place with a tamping-iron or heavy wooden rammer, lay quickly, so that the layers adhere to each other; and in cold weather, to avoid freezing, use one pound of salt to fifteen or eighteen gallons of water. In hot weather, after concrete has set (say twelve hours), wet frequently with water, especially on sidewalk work. Do not place concrete or Portland cement mortar against any surface or in any place where the water can be dried out or evaporated. If required to lay concrete or Portland cement mortar in a wooden frame or against dry brick or stone work, always saturate the frame, brick or stone thoroughly with water first.

Directions for Laying Sidewalks.

Depth of excavation depends greatly on soil; if walks are bounded on each side by soil, fifteen or eighteen inches should be excavated and filled up within four inches of level, with good ashes, clinker, cinder, gravel or stone, sprinkled and rammed well—this is necessary to prevent frost from getting under pavement. Stakes and strips (4x4 inches) should be set on the outside to keep the walk straight; then fill to within one-half inch of the top of strips with concrete mixed proportionately as stated in "Proportion for Concrete Work," ram well, as previously directed. Before the sub-surface is hard set, fill the remaining half inch with top surface, which is generally composed of one part cement and one part good sand, or coarsely ground marble dust, or ground, raw limestone or trap rock, screened from one-sixteenth to one-eighth in size. Limestone is the most desirable as it gives a very compact, glassy finish. Obtain an even surface by working the top dressing backward and forward with the edge of a level board, which should rest on the strips on each side of the walk; when it is worked sufficiently to fill all pores, trowel even surface. Too much troweling is objectionable. Blocks should be laid in four or five foot squares; lay every other block, returning to lay intervening blocks when the first ones are sufficiently set to allow of strips being removed. Waterproof paper should be laid between joints to prevent the sections adhering to each other. Never use pure cement for dusting, but use equal parts of cement and crushed rock, white sand or limestone dust. Dusting should be avoided and only done in cases where it is found too much water has been added to the mixture. Protect the surface against hot rays of sun and against currents of air. Walks laid according to the above rule will require seven or eight pounds of Portland cement to the square foot. Curbs and gutters should be made in one that they may bind together, and should be made in lengths of four or five feet each. The facing or curbing should be finished with a coating of one part cement to one part sand, carefully worked and troweled as soon as the boards can be moved to admit the same. The edges should be beveled off. One barrel of Portland cement will lay about forty-five square feet of good sidewalk.

Cellar Floors.

Cellar floors should be from three to four inches in thickness, concrete to vary in strength in proportion to the use the cellar is to be put to. For ordinary purposes, a concrete mixture of one part Portland cement, five parts sand and ten parts gravel or stone will be sufficient. Top surface to be made same as sidewalks. One barrel of Portland cement will lay about seventy-five square feet of good cellar flooring.

Mortar.

For masonry and brickwork, use one part Portland cement to five or six parts of clean, sharp sand, adding one-half part of good, fresh slaked lime paste to give the mortar a plastic nature and add more lime if necessary. Special, high class work can be done with one part Portland cement and two parts sand and no lime, but for ordinary good work, a Portland cement mortar works too short for spread well in brick work and it is admitted by the best authorities that the addition of lime for brick work (only) is not objectionable. One barrel of Portland cement (lime specifications) should be sufficient to make enough mortar to lay about two thousand brick with quarter-inch joints.

Fowler & Pay, of Mankato, Minn., will install a new stone crushing plant at Mankato, and will also open at Minnesota Transfer, Minn., a warehouse, to handle lime, cement, plaster, etc., at wholesale, and they will have a branch order office at 215 Lumber Exchange, Minneapolis, Minn.

SNAP SHOTS AT DETROIT.

(*Continued from First Page.*)

Dealers' Association. Mr. Hotchkiss for a life time has been connected with the lumber lines and the interesting truths which he gave the meeting through his paper on "Organization," interested every one present, and as of yore, his grand finale was a clincher to what had gone before.

The enthusiastic president of the National Plaster Manufacturers' Association, H. E. Dingley, is an expert on plaster matters, and he has some strong points which make him the idol of the ladies. He was elected as a member of a committee to help entertain them and he did it to a queen's taste.

Jesse Freeman, the general sales agent of the American Sewer Pipe Co., was accompanied by Mrs. Freeman, who was helping him enjoy his vacation on the lakes. Mr. Freeman is one of those enthusiastic business men who dream about sewer pipe at night—where he can lay 10 or 15 miles of the big pipe for which his company is famous.

Among the missing at this convention was one who has done much to make the National Builders' Supply Association a success, Secretary Richard Kind. Overwork at last succeeded in shelving this hustling secretary of the Toledo Builders' Supply Association, and his substitute, Assistant Secretary West, was a good one. Yet we missed the genial Richard, who counts his friends by the thousands.

Among the new members of the National Builders' Supply Association at Detroit was Owen Tyler, of Louisville, Ky. As the guest of Kenney, the weatherstrip man, and Thomas, the brick man of Detroit, there was something doing for Tyler every minute he could spare from the meetings of the association, and he was very much pleased with his first visit with the delegates at Detroit. As the guest of Thomas, the editor of ROCK PRODUCTS, accompanied by Messrs. Tyler and Kenney, was given a spin in Mr. Thomas' auto., and the way Mr. Thomas skipped dogs, gutters, and street cars was marvelous. One would enjoy borrowing the money to buy an automobile if he could handle one with the same dexterity as Mr. Thomas handles the levers. Perhaps he was feeling so good over getting a number of good contracts for brick that week that business cares were forgotten and the enjoyment of his guests was his principal object, but Mr. Thomas is one of those business men who works hard when he is at it, and when he is looking for enjoyment, gets all there is in it. He is a member of the firm of Thomas Bros., of Detroit.

The Batavia (Ill.) Supply Co. has bought a new stone crusher from the Western Wheel Scraper Co., of Aurora, Ill.

William Wirt Clark & Co., Baltimore, Md., have secured a contract to furnish a million vitrified brick at Washington, D. C.

The William Stuart Co. has been incorporated with a capital stock of $40,000.00, to manufacture and deal in brick, stone, etc. Their present office address is the New Jersey Corporation Guarantee and Trust Co. Building, Camden, N. J. The incorporators are: Frank N. McKelvey, William Stuart and Henry A. Bechter.

On October 27 and 28 the Ohio State Builders' Exchange will meet at Zanesville, Ohio. Business meetings at 10 a. m. and 2 p. m. The association dinner will be pulled off at 8 p. m. and there will be a ball at 9 p. m. On the second day at 9 a. m. there will be an election of State officers. At 1 p. m. as guests of the Zanesville Association the delegates will take a trip up the Muskingun River by Eaglesport and return. The State officers of this association are F. O. Schoeddinger, president, Columbus, Ohio, and E. A. Roberts, secretary, Cleveland, Ohio.

Bay City, Mich., which was only a few years ago strictly a lumber town, is showing a pleasing activity in other building material lines. Two active concerns in the trade are F. P. Young and Boutell Bros., both having good, substantial brick offices. Then, across on the West side of the river Mr. C. M. Clute receives his customers in a pleasant office, and there is an air of prosperity about all of them. Some idea of the business done by Boutell Bros. can be gained from the fact that this concern keeps from 10 to 12 teams going all the time, and in addition to their local business they do business all over the State of Michigan. Mr. Evans, manager of this concern, treated a member of the Editorial Staff of ROCK PRODUCTS to a ride out to the Hecla Portland Cement Co. plant during a recent trip up there.

BUSINESS TIPS.

The Peace Society of New York City, will erect a monument entitled "Peace" at the World's Fair.

The *Daily Times* of Adrian, Mich., is receiving subscriptions for a memorial to "Aunt Laura Haviland."

The McPherson Post G. A. R., Traverse City, Iowa, is figuring on purchasing monuments for their cemetery lots.

The Soldiers' Monument Association has been organized at Lebanon, Ind., to raise $15,000.00 for soldiers' monuments. Mayor Noah Laughrun is chairman.

Chief of Police Milliken, of Cincinnati, Ohio, has been entrusted with the duty of selecting the proper form for a $200,000.00 bond issue for the building of a memorial hall.

The Commissioners of the Mullanphy Emigrant Relief Fund, St. Louis, Mo., are taking steps looking to the erection of a monument in memory of the late Bryan Mullanphy.

Major William B. Palmer, Norfolk, Va., is treasurer of a fund to erect an equestrian statue to Gen. J. E. B. Stewart. From last reports they have on hand $7,000.00 for this purpose.

The Andersonville (Mich.) Monument Commission has decided to call for designs for monuments at a meeting to be held at Andersonville, Mich., September 21. It is the intention of the commission to select a design so that it may be dedicated next Memorial day.

They may say what they will about the "Woodmen of the World," but when we consider that this fraternity has erected over 6,000 monuments, representing nominally $100.00 each, and also consider the further fact that without this organization many of these men would be without a monument of any kind, it does not sound so bad from a monumental standpoint.

One day during the past month we took a little car ride over to New Albany, Ind., and while there called in to see John Vernia & Son, proprietors of the New Albany Marble Works, who have a shop on the corner of Pearl and Elm Streets. We found that they carry a fine lot of native marble and granite, also an excellent stock of Italian marble and Scotch and Swede granites. They not only carry a fine stock, but are thoroughly posted in their business, and not only know what they are doing but know stone and its peculiarities.

Monuments.

A new monument firm at Litchfield, Ill., is the Central Illinois Monument Co.

The monument business of A. E. Price, at Elgin, Ill., has been purchased by Albert Soper.

The Springfield Monument Co., Springfield, Ill., has increased its capital stock to $25,000.00.

B. Kissel & Son, Belleville, Ill., have opened up a branch of their business at Edwardsville, Ill.

Connor & Casterline, of Tipton, Iowa, put up a $500.00 monument at Oberlin, Kan., last month.

George Lutz has moved his marble and granite works from Cedar Rapids, Iowa, to Marion, Iowa.

J. J. Paddock & Son, of Manhattan, Kan., are preparing to erect a marble works at Salina, Kan.

The Melcher Marble and Granite Co., Mt. Pleasant, Iowa, will enlarge its plant and add to its equipment.

The Powell Marble and Granite Co. is a new concern which recently opened at 1023 Eighth Street, Boone, Iowa.

The Fred A. Lang Marble and Granite Co., Parkersburg, W. Va., has moved into new quarters at 318 Fifth Street.

J. M. Rudd, Marion, Ind., has bought out his partner, Mr. Owens, and now conducts the monument business alone.

The City Marble and Granite Co. have succeeded the firm of Whitney & Co., Oskaloosa, Ia. The manager is J. E. Easter.

Merkle & Sons, monument dealers of Peoria, Ill., have presented the town of Chattsworth, Ill., with a drinking fountain for Armstrong Park.

The Flint Marble Co., of Albany, N. Y., has received a contract to erect a monument for the Aldine society in memory of Sir William Johnson.

L. F. Palmer has severed his connection with the monument concern at Iola, Kan., of Palmer & Coffield, and will open up a shop of his own.

J. Frank Sallade, formerly of the Collin's Marble Works, at Pottsville, Pa., will open up a marble shop of his own in that town by September 1.

Charles Reeb has sold out his interest in the Reeb Granite Co., at Pontiac, Ill., and the firm name has been changed to the Pontiac Granite Co.

The Waycross Marble and Granite Co., Waycross, Ga., is a new concern that has opened up a granite business, and the proprietor is W. S. Johnson.

Sebastian & Son, of Albion, Mich., have been taking some nice contracts the past month and doing some extensive business in the monumental line.

The Smith Granite Co., of Westerly, R. I., has secured a contract to build a large mausoleum of Westerly granite at York, Pa., for Daniel F. Lafean.

The Tennessee Marble and Monument Co. has been incorporated at Knoxville, Tenn., with a capital stock of $10,000.00, with F. E. Brady as president.

Shurson & Hultman, Hutchison, Minn., have sold out their monument business to Zierke Bros., of that place, and the two institutions have been combined.

The Washington (Kan.) Marble Co., has been building an addition to its shop the past month to take care of the increased business. With the new addition completed they will have one of the best shops in that part of Kansas.

A. O. McMath & Son, proprietors of the Herkimer (N. Y.) Marble Works, have purchased a lot on which they will build a new marble shop, changing their location from the present quarters on South Main Street to the corner of Main and Mohawk Streets.

Ira T. Tullis, marble and granite dealer of Alliance, Ohio, has been having quite a run of business lately; in fact, he reports that business was never better.

Spooner & Morris, of Shenandoah, Iowa, will erect a new building for their monument works and put in a 10 h. p. engine to furnish power, and pneumatic tools.

Mr. Leonard Tressel has bought an interest in the monument business of W. H. Houpt, of Mansfield, Ohio, and the firm will now be known as Houpt & Tressel.

The Eckhart Monumental Co., of Toledo, Ohio, has purchased the marble works of Joseph Harter, Tiffin, Ohio. The new firm will continue the business at its present location.

C. W. Davis, proprietor of the Ridgway (Ill.) Granite and Marble Works, has bought the Harrisburg Granite and Marble Works, and will continue running the business at Ridgway as heretofore.

The monument works at Pennville, Ind., established by C. F. Premer, has been purchased by Wearly & Ware, of Montpelier, Ind. The new owners will continue to operate the works at the present location.

Nuernberg & Huemiller, a new monument concern at Mt. Clemens, Mich., mention of which was made in ROCK PRODUCTS for August, have their place in operation and seem to be getting their share of business.

J. B. Webber, Jamestown, Ohio, is building a new monument shop out of hollow concrete blocks. When completed he will equip the plant with modern machinery and appliances for handling granite and marble monuments.

Ivey & Wachtel, of Carroll, Ill., have been having a very busy month, according to reports from the local paper; in fact, they have enough orders on hand now to keep them going for two months, if no more were to be secured.

Milligan & Franks have gone into the monument business at Champaign, Ill., where they have opened up offices at 202 and 203 Illinois Building. They will simply deal in monuments; that is, have monuments made to order at the quarries and will not operate a shop.

The Floyd Monument, at Sioux City, Iowa, which is considered by many as being the most beautiful monument West of Chicago, and for which the Government and the State of Iowa made appropriations for a reproduction at the World's Fair at St. Louis, was destroyed by lightning July 23.

The Charleston Monument Co., has been incorporated at Charleston, Ill., with a capital stock of $10,000.00. The incorporators are: Carlos Wheatley, president; W. D. Sedgwick, first vice president; R. L. Hall, second vice president; Robert Wilton, secretary, and Alex Briggs, treasurer.

Pennell Bros., Sheboygan, Mich., have among other recent jobs placed a very artistic monument in Fairview cemetery at Gaylord, Mich. The design is a statue, which is five feet high, of a girl holding a garland of flowers, made of pure white Italian marble. The base and die are of Quincy granite.

Rev. Bishop Hoban, of Williamsport, Pa., has awarded to M. V. McHugh, of New York, an order for an artistic and appropriate monument to the late Bishop O'Hara, the pioneer bishop of the Scranton, Pa., diocese. The monument will be of Barre granite and the design calls for a beautiful Celtic cross 13 feet high.

The Enterprise Granite Co., of Llano, Tex., has had a special job in red granite the past month. The rock was secured from a heretofore undeveloped quarry and it is considered by experts to be one of the finest pieces of red granite in the world. It was taken from Sandstone Mountain, two miles East of Llano.

The Griffith Marble Co. has been incorporated at Carthage, Mo., with a capital stock of $7,500. The incorporators are: W. A. Griffith, G. C. Kellogg and C. W. Whitesell. This company is a well known concern at Carthage, but heretofore it has been conducted as a partnership business. Mr. Whitesell is a new man in the concern.

Robert P. Bringhurst, of St. Louis, Mo., has secured the contract for the Wisconsin Shiloh Monument, which was designed by W. R. Hodges, of St. Louis, Mo., a member of the Thirtieth Wisconsin regiment. Mr. Bringhurst is professor of modeling in the St. Louis School of Fine Arts. The statute will be of bronze. Wisconsin granite is the material chosen for the pedestal.

George Faulkner, proprietor of the Flemingsburg (Ky.) Marble Works, has been increasing the facilities of its works by the addition of a power plant. He does some excellent work for the trade and the work seems to be appreciated, judging from the way his business is in increasing.

A Great Call for Labor.

John Naugle, Bedford, Ind.—Replying to your inquiry about what is new in this vicinity, I know of nothing new except there is a great demand for labor of all kinds in the stone line, and all the machinery that can be run 24 hours a day is being pushed to its utmost capacity.

Mixing Cement for Monumental Work.

During the past month we received an inquiry for "LaFarge" cement. The party stated that he did not require very much, but was unable to find that brand on the market, and this same inquiry seems to have been sent to *The Reporter*, Chicago, Ill.—at least there was an answer given to that same question by it, and which we reproduce herewith:

"We have never heard of the cement called 'LaFarge,' and think you must refer to litharge cement, which is not made and sold as a commodity, but may be made in either one of two different ways. Quoting from our Marble and Granite Workers' Guide, we take the following: 'M. Pollack, of Saxony, states that for a period of several years he has used to fasten stone to stone and iron to iron a paste made of pure oxide of lead, litharge and glycerine in a concentrated state. The mixture hardens rapidly and is not affected by heat. He has used it to fasten the different portions of a flywheel (doubtful), while, when placed between stones and allowed to harden it is easier to break the stones than the joints.' Another: 'Cement for outside of brick walls, to imitate stone, is made of clean sand, 90 parts; plaster Paris, 5 parts; litharge, 5 parts; moistened with boiled linseed oil. The bricks should receive two or three coats of oil before applying the cement.' We are inclined to think the first is the cement you are looking for. A commonly used cement for pointing up vaults is made of best Portland cement and clean sand, colored with a little bone black to nearly match the color of the granite. Another good setting cement is made by mixing dry white lead to a putty with good copal varnish, working and kneading it well with the hands before applying. To use, roll it out in a long roll about the thickness of a lead pencil or a little larger, lay along the edge of the lower stone and let the top one down onto it, scraping away the surplus that is squeezed out."

Two correspondents of the *Monumental News* tell of ways to make cement for setting monuments also, which are as follows:

"The way to mix cement for setting granite, as I have used it for 15 years, is to dry white lead and mix it with varnish. Copal varnish is nearly free from oil. Mix it the same as you would dough. When you are ready to use it, take a piece and roll it in a string on a board. Use the palm of your hand. Make it as long as you wish, like a worm, and place it on the base and let the end lap over. Then when the die comes down on it, it will crush out. Trim with a knife when the job is set.

"Cullman, Ala. W. J. KEMP."

"In your answer to an inquiry by J. C. H., of Michigan, I note you tell him he can make a cement to set granite monuments by a mixture of white lead and marble dust. This mixture will stain a stone, which stain will travel up until absorbed. The following is a mixture which the writer has used for a number of years, which will not stain the stone: Take dry white lead, mix it with a good quality of varnish, use drying coloring matter to produce the color required. This is to be mixed with a hand hammer, and the more it is worked, the better it gets. Should it dry up on you, it is all the better after being mixed the second time, and it will keep for several days in an air-tight dish or in water. In cold weather it needs to be warmed before using.

"New York City. OLIVER H. LEAMAN."

We will be glad to have comments from the readers of ROCK PRODUCTS on these matters, and will also be glad to hear from others who have formulas for preparing cement for monumental work. In fact, we want our monumental readers to consider this department their own and use it for the discussion of any and all questions of interest to the trade. In other words, let us swap ideas, which is a pleasing pastime that lightens business cares and adds to the profit account at the end of the year.

Asphalt.

The Barber Asphalt Co. has received contracts for considerable street paving at Harrisburg, Pa.

The American Standard Asphalt Co. has a contract for doing $16,000.00 worth of paving at Louisville, Ky.

The firm of Charles L. Pitts & Co. has been incorporated at Newark, N. J., with a capital stock of $50,000.00 to deal in asphalt.

The Grand Rapids (Mich.) Paving Co., of which H. M. Atwood is the head is figuring on erecting an asphalt plant at that place, where they will convert Kentucky rock asphalt into street paving material.

The Morgan County Oil and Asphalt Co., with headquarters at Hartselle, Ala., owns several thousand acres of oil and asphalt land which they are making arrangements to develop. The officers of the company are: Samuel Blackwell, New Decatur, president; J. A. Rountree, Birmingham, secretary-treasurer, and Dr. D. W. Day, Hartselle, general manager.

A new asphalt company known as The Intermountain Asphalt Co., has been organized to develop asphalt in Utah, near the headquarters of Willow Creek, Grand County, and contract has been let to A. T. Davis of Berkeley, Cal., to build a 100-ton refinery. The incorporators of the company are: W. H. Innes, Boise, Idaho, president; W. R. Schuttler, Salt Lake, vice president; Truman Schenk and Nels Forsberg, secretary.

Struck Oil.

The Hoosier Prospecting Co., Princeton, Ind.—In prospecting for asphalt we were fortunate in striking a strong flow of oil at a depth of 851 feet. This oil proves to be 65 per cent. lubricant oil of very fine quality and the flow is about fifty barrels a day.

A Study in Asphalt Street Paving.

The vast increase of the use of asphalt as paving material during the last ten years, the passing of stone paving blocks, wooden blocks and brick blocks, to the sheet asphalt, and asphalt blocks even on streets with heavy traffic, has rendered the subject of asphalt very interesting. Very little has been written on the subject, as the exact nature and use of the material is as much a matter of experiment as of exact knowledge.

The City of Washington, with its well known "magnificent distances," is a city of asphalt pavements, having possibly, in proportion to its size, as great an extent of pavements of this character as any city in the United States, and as more care is given to the inspection of the manufacture and laying of these pavements than in any other city, the following information, largely from reports made by Mr. A. W. Dow, Inspector of Asphalts and Cements of the District of Columbia, in his various annual statements is interesting.

First, however, it is necessary to bear in mind the nature of the terms employed in the making of this material, many of which are commonly used interchangeably.

How Paving Asphalt is Made.

The bitumen which is the chief essential of any asphalt pavement, although one of the smallest of the proportions of materials which go to make up the pavement, is technically, any hydrocarbon soluble in carbon bisulphide, and is either natural or artificial.

Asphaltum is a natural bitumen, of which more or less is soluble in petroleum naptha and occurs generally mixed with mineral matter and other impurities.

The paving asphalt is made from an asphalt cement which in turn is made from the refined bitumen, which in itself too hard for use as pavement, is softened into a cement by mixing with various materials called fluxes. The bitumen from which the asphalt streets are made comes mostly from Lake Trinidad, a volcanic lake on the Island of Trinidad near the mouth of the Orinoco off the coast of Venezuela in South America. Here the pitch or bitumen is forming all the time. The center of the lake is a soft, pliable material, while the edge is harder. In past times the lake has overflowed the country, and, cooling, becoming hard and brittle, losing some of its volatile compounds, and mingling with the soil, is called "land pitch" in contradistinction to the "lake pitch." Lake Trinidad is some 138 feet above sea level and has an area of 114 acres. The renewal of the supply of this lake pitch is said to be considerably less than the amount taken out yearly, which amounted in 1901 to about 136,064 tons, but as this lake is over 130 feet deep the supply does not seem to be in danger of exhaustion.

How "Trinidad" Asphalt is Secured.

The mining of the lake pitch is a very simple process, the material being simply dug out of the lake and placed in the hold of the vessel. The crude material at the lake is not excessively sticky. It flakes by use of pick, can be crumbled in cool weather, and in warm weather yields to gradual pressure, bending under not too heavy weight. On the voyage the material by viscous flow solidifies, forming a solid mass, and has to be dug from the hold the same as originally from the lake. When dumped for storage, it first solidifies and then spreads in every direction, requiring a firm compartment to resist the pressure. Originally this material was refined at La Brea, Trinidad, but it is now refined at the several refineries in this country. Other sources of "land pitch" are at La Brea, Trinidad, and Bermudez, Venezuela.

The Trinidad lake asphalt has been so long and satisfactorily used and claimed to be so superior to the "land pitch" that this latter material has found hard work to get a foothold with the paving contractors. In 1889 a cargo of land pitch consigned to Washington, D. C., was condemned as unsuitable for paving material, and this gave rise to considerable investigation which still continues. However, the much discussed merits of Trinidad lake and land asphalt has resulted in victories for both sides, and with the result that both are regarded as good asphalts, but with different qualities; that either with proper manipulation and treatment will make a good pavement, and that either with improper use will make a bad pavement. These asphalts appear to be of common origin, the land asphalt being regarded as either an overflow from the lake or being forced up through the earth from the same source of supply as the lake.

"Lake" and "Land Pitch" Compared.

Loss of volatile compounds and hardness of the land asphalt is the chief cause of complaint, this rendering the use of more flux necessary to soften the land asphalt than the lake asphalt. Paving cements having the same consistency at the same temperature were found to need seventeen parts of flux to one hundred parts of refined lake asphaltum to twenty-two parts of flux to one hundred parts of land asphaltum. The lake asphalt is, however, slightly more altered by temperature than land, and more readily acted upon by water. Other minor superiorities and inferiorities occur between the two, but possibly the greatest difference comes from the fact that it was possible to get the lake pitch under the control of one powerful company, while the various deposits of land pitch enable this to be owned by various smaller concerns.

(To be Continued.)

Says Water Does Not Trouble Their Gypsum Working.

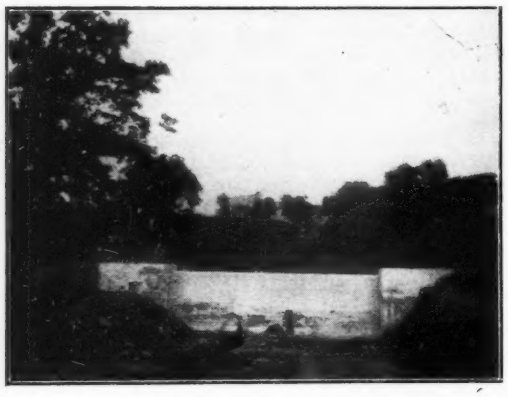
The Winters Gypsum Co., Sandusky Ohio, take exceptions to the statement made in regard to their gypsum deposit in the article on Ohio gypsum deposits in ROCK PRODUCTS for August, and have this to say in regard to it: "Mr. W. E. Hills, of Bellevue, did the drilling on this property, and we developed fifty acres that will average forty feet of solid gypsum, and there was no water struck in the gypsum, but we did drill down through the gypsum thirty feet and struck some water, but not enough to speak of. We wish you would correct the statement, as it is a great injury to our company." We want to assure the Winters Gypsum Co., and for that matter all the readers of ROCK PRODUCTS, that it is not the intention of this paper to misrepresent the business of any concern, or to willingly injure any concern, and we will appreciate it if all will bear in mind this point. When we are in error, it is not intentional, and we will appreciate having our attention called to the fact.

Cement.

The Slag Cement Industry Expanding.

We have discussed slag cement in these columns at various times, and it keeps demanding attention. In fact, there is quite a lot of expansion to be noted in this branch of the cement industry this year, and a lot more of the same thing projected for next year. Not only is this true of conditions at home, but there is a spirit of expansion in the older countries, as will appear from the following extract from a recent report of Consul-General Oliver J. D. Hughes, of Coburg, Germany:

"Portland cement has been made from blast-furnace slag for several years in various cement



Concrete Dam at Youngstown, Ohio, Built of Brier Hill Slag and Slag Cement.

works in Germany, Luxemburg, and Belgium, and has yielded very satisfactory results, especially in regard to quality. Negotiations are being carried on with some blast-furnace works with a view to the introduction of the slag-cement industry into England, Austria and France."

A pioneer in the slag cement field in this country is the Brier Hill Iron and Coal Co., of Youngstown, Ohio. This company began the manufacture of cement from blast furnace slag in 1898, and have made quite a record in the business. Their cement is known as "Brier Hill Puzzolan."

A New Cement Plant in Spain—With American Machinery.

Consul General Julius G. Lay, of Barcelona, Spain, says that during the past year there has been under course of construction near Pobla de Lillet, province of Barcelona, a Portland cement plant which is equipped with American machinery of modern type. The plant, though built by Spanish capital, is not only equipped with American machinery, but is handled by American engineers, and Mr. Ewing, chief engineer, furnishes the following description:

The cement plant of the Compania General de Asfaltos y Portland at Pobla de Lillet, province of Barcelona, is installed at present with three modern rotary kilns and all the necessary rock-reduction and clinker-refining machinery as used in modern practice in Pennsylvania, the various machines and kilns being placed on different levels, all forming what is generally known as a gravity plant.

The rock enters the mill at an elevation of 161 feet above the lowest level, or level of road, and gradually passes from the rock breaker to the stone rolls and then to the stone dryer, from which it is conducted to the ball and tube mills, when it is ready to be fed into the upper ends of the rotary kilns. At the same time this process is in progress, in a separate building the soft coal is being dried and pulverized and conducted to tanks in front of the rotary kilns, to the lower, or front end of which a center feed of pulverized coal is governed and affected by an air blast. The feed of pulverized stone and coal are so regulated as to furnish the necessary quantity of both kinds of raw material—also to affect the required degree of temperature—to produce in a calcined form normal Portland clinker, which by special cooling devices is made ready for the finishing ball and tube mills from which latter machines the finished cement is conveyed to the stock house and finally to the packing and shipping rooms, where it is loaded onto wagons of large capacity, ready for hauling by a 50-horse power steam locomobile, made in California, to the nearest railway station.

The plant is to be driven by vertical impulse water wheels of the latest improvement, each wheel being designed with the special speed to suit the machine or machines to be driven. There are nine separate wheels or drives which afford the supreme advantage of running any one or all parts of the machinery in the various departments at will.

The power to drive the mill is furnished by a waterfall conducted to the mill by a metal pipe line 4.7 kilometers (2.9 miles) in length, furnishing normally about 2,400 horse power.

The pipe line traverses a rugged, rocky canon from the mill to the source of the Llobregat River, there being necessary along its length five trestle bridges, on tunnel 100 feet long driven through solid rock, many large rock cuts, and masonry piers of support for pipe. In order to lay this pipe, special roads and incline planes have had to be built to reach, first, the mill with the pipe, and finally its disposition along the line, the latter being by far the more difficult.

The coal for the manufacture of the cement it is proposed to extract from a special lignite mine, from which an aerial cable will conduct the material to either a deposit next the company road in Pobla de Lillet or to the mill direct.

In the mill there is to be installed a special compressed-air and electric-light plant for operating the rock drills and lighting the mill and the engineer's house, as well as the administration and chemical-laboratory buildings. There will also be installed a complete machine shop for making repairs of all kinds, which in a cement mill of this kind is an imperative necessity.

The capital invested is some 2,500,000 pesetas ($482,500.00). The quality of cement is to be equal to the highest grade of the Portland cement made in the Lehigh district of Pennsylvania, the raw product being identical. The present building, one-half of the original project, is 116 by 395 feet by an average height of about 30 feet on each level, of which there are 14. The properties, including the asphalt, cement-rock, coal and forest claims, are very extensive, there being enough cement rock to last for centuries.

The estimated daily output will be 500 barrels (100 tons) with the present installation. In the near future it is proposed to increase the output to 1,000 barrels per day, there being sufficient power in reserve to operate the larger mill.

With the mechanical advantages possessed in having the latest improved American cement-making machinery and water-wheel construction, combined with the natural advantages of water, rock, and coal, it is assured that the cost of production will be such as to guarantee a greater consumption of Portland cement in Spain, and therefore lead to the more extensive developments of this steadily rising industry within the Iberian Peninsula.

West Coast Cement Plants.

One of our correspondents recently made inquiry about the cement plants of the Pacific Coast, number of plants, locations, etc., and practically this same matter was asked the Question Department of the *Municipal Engineer*, to which the following reply was made:

"The cement works on the Pacific slope which have been in operation for some years are the California Portland Cement Co., of Colton, Cal., Frank H. Jackson, director and sales agent, Los Angeles, Cal., and the Portland Cement Co. of Utah, of Salt Lake City, Utah. T. C. Cairns, director and general manager.

"New works which are in operation, or will be shortly, are those of the Pacific Portland Cement Co., Claus Spreckles Building, San Francisco, Cal., Samuel McMurtrie, secretary, with works at Suisun; Pacific Portland Cement Co., Rookery Building, Spokane, Wash., W. T. Dowsing, secretary and treasurer, with works at Portland, Wash.

Projects which have not yet developed to the point of beginning manufacture are the California Cement and Lime Co., 328 Montgomery Street, San Francisco, Cal., T. C. Lewis, secretary; Great Western Cement Co., E. B. Crane, president, 64 Federal Street, Boston, Mass.; Pacific Coast Portland Cement Co., 66 Broadway, New York.

Doubling Their Capacity.

The Chickamauga Cement Co., Chattanooga, Tenn.—Replying to your inquiry about business and news of the trade, we can only say that we are behind in filling our orders, running fourteen hours a day, and doing the best we can to keep up with our trade. We are doubling the capacity of our plant and expect to have all new machinery running within the next four weeks, which will relieve the situation somewhat. So far as we can see, the demand for our cement in the South has come to stay. Our only difficulty is to make it fast enough to supply our orders.

The Logan Portland Cement Co. has been incorporated to succeed the Twentieth Century Portland Cement Co., at Flint, Mich. Capital stock $1,000,000.00. The prime movers in the enterprise are: J. H. Logan and W. W. Phelps.

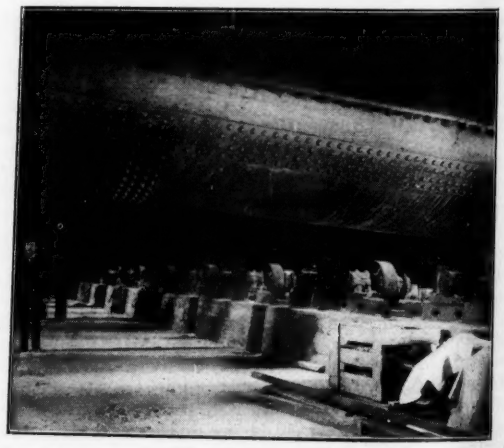
During a heavy thunder storm at Akron, N. Y., lightning struck the powder magazine of the Akron Cement Co., just outside of the town and exploded two tons of dynamite belonging to the company. No one was killed by the explosion, but several seem to have been slightly injured and quite a lot of houses were shaken up. A Catholic church near there was so shaken that candles on the altar tipped over and there was a panic among the worshipers.

The New Cement Plant at Hudson, N. Y.

Lyman C. Smith, of Syracuse, N. Y., president of the Hudson Portland Cement Co., saw during the past month the starting of the immense cement plant at Hudson. It ran successfully from the first day and has been going like clockwork ever since.

There are but few cement plants in this country that can surpass this one in size. The buildings are ten in number, covering three acres, and the output is given at 2,250 barrels a day. To get an idea of the bulk of this product imagine a train of cars fifty miles long, reaching from Hudson to Schenectady, N. Y., each box car being filled with cement. This would be equivalent to one year's production. If placed in barrels and the barrels placed end to end, it would form an unbroken line of barrels from Hudson to Buffalo, or practically across the State of New York.

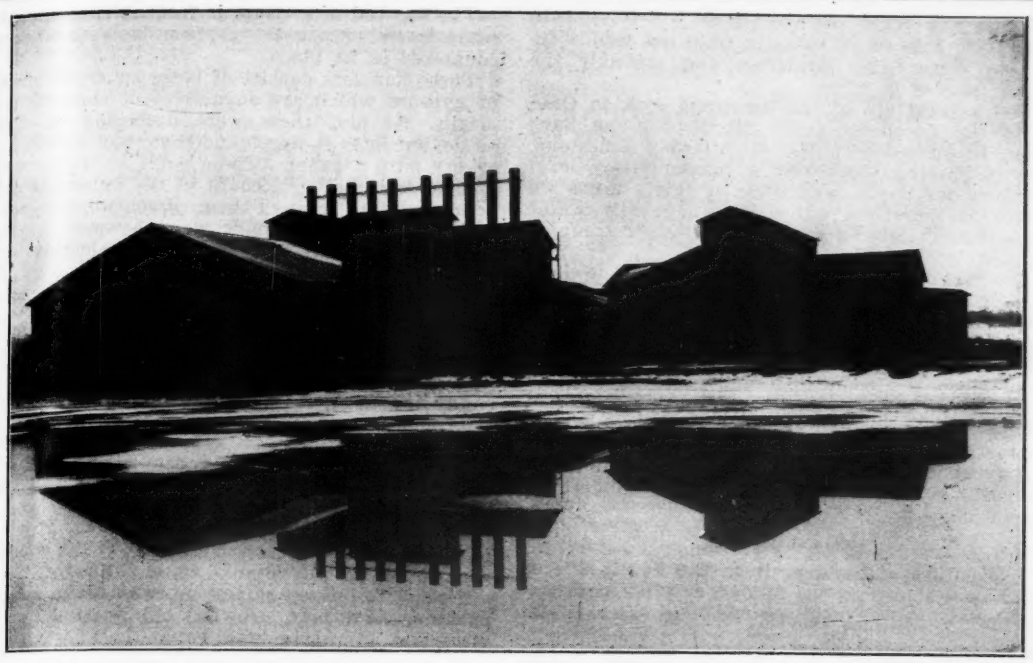
Mr. Smith spent five days at the plant and familiarized himself with every detail. He has the only cement plant East of the Hudson River, so located that boats can be filled at its docks for any port in the world without transfer. The plant



View in the Roasting Department of the Hudson (N. Y.) Portland Cement Co.

is equipped with entirely automatic machinery and all the labor required is to attend to the machines.

The buildings of the plant are ten in number. The machinery building is 120 feet wide by 385 feet long, and has a 26-foot wall at the lowest point. It is of fireproof construction. The other buildings are: a coal house, 44x133 feet; boiler house 95x94 feet, with a wing 21x41 feet; engine house 56x128 feet, two stories high; stock house 110x410 feet with cornices 35 feet above the ground level; office building, frame 44x54 feet; cooperage building, 32x130 feet; locomotive building, 30x60 feet; machine and blacksmith shop, 28x50 feet. These latter buildings are of corrugated iron siding and slag roofing. In addition to the buildings of the plant the company owns fifteen dwelling houses scattered over its 1,200 acres. The boiler plant is of 2,000 horse power.



PLANT OF THE HUDSON (N. Y.) PORTLAND CEMENT CO., CAPACITY 2250 BARRELS A DAY.

There are no bonds or other obligations against the company and there is no stock for sale. The company is capitalized at $6,000,000.00, and its officers are: Lyman C. Smith, president; Fred B. Scott, vice president; B. Lyman Smith, secretary and treasurer, and E. Bravender, general manager.

An interesting part of the plant is the engine house, two stories high. It is so arranged that the steam piping, steam separators, high and low pressure traps, steam traps, vacuum pumps, oil pump and condensers are all in the basement. There is a fire pump of 1,000 gallons capacity per minute located in the North end. The engine room contains three 20x40x48 cross-compound condensing Corliss engines. The weight of each engine is 200,000 pounds, not including generator. All the machinery is operated by electricity.

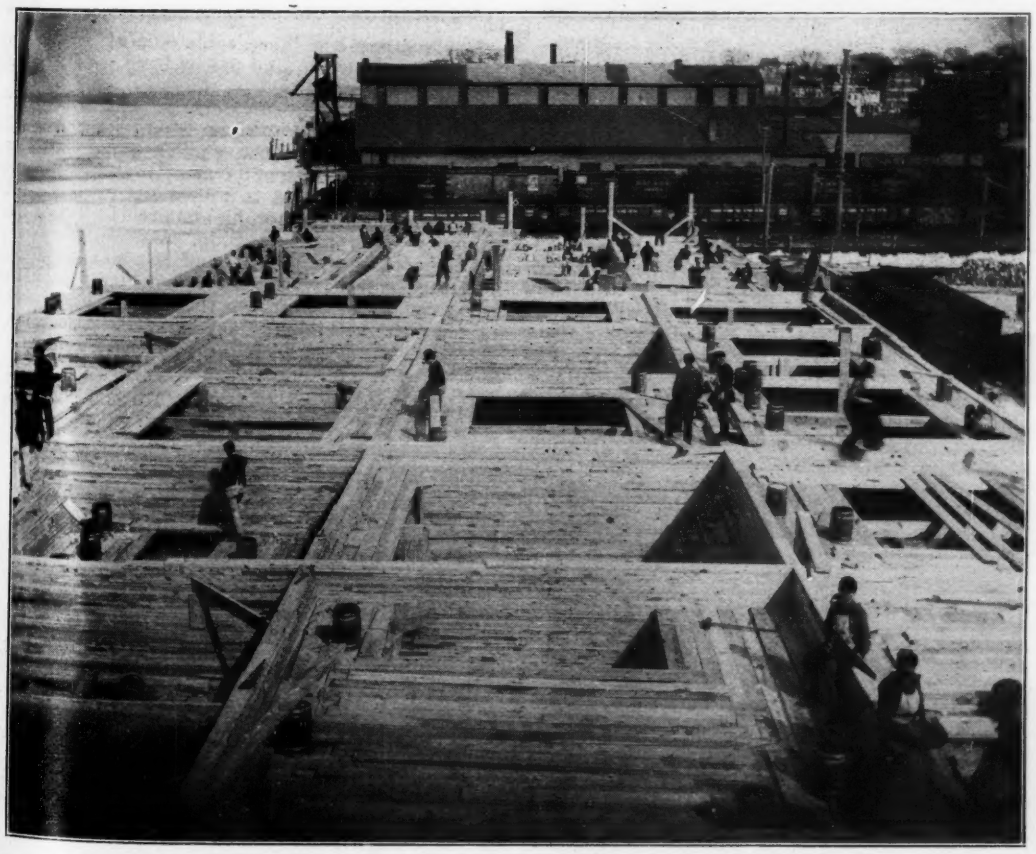
The Hancock Cement Co. has been incorporated at Hancock, Md., with a capital stock of $250,000.00. The incorporators are: Albert L. House, New York City; Charles L. Bauer, Springfield, Ohio: Milton B. Crowell, Norfolk, Va.; J. Augustine Mason, and George H. Hager, Hagerstown; J. Frank Fields and John Brooks, Hancock, Md.

The Empire Portland Cement Co., Warners, N. Y., closed down for a week the latter part of July on account of breaking a main shaft.

The National Portland Cement Co., of Pittsburg, Pa., has filed a certificate of incorporation with a capital stock of $750,000.00. The incorporators are: William P. Lawrence, George S. Houghton and Thomas Latimer.

The Shinn Slag-Sand Co. has been incorporated at Pittsburg, Pa., to manufacture cement from blast furnace slag, and in connection therewith slag-sand for concrete work. The process involved seems to be a new one and is the result of investigations by Joseph A. Shinn, of Pittsburg.

The Aetna Portland Cement Co., with offices in the Union Trust Building, Detroit, Mich., and factory at Fenton, Mich., which is a reorganization of the Detroit Portland Cement Co., has installed a new Bartlett dryer and Griffin mills. This company contemplates increasing the capacity of its plant in the near future. The stock and bondholders of the concern are essentially the same as those of its predecessor, the Detroit Portland Cement Co.



VIEW OF STOCK HOUSE OF THE HUDSON (N. Y.) PORTLAND CEMENT CO. IN COURSE OF CONSTRUCTION.

Fred Franks, of Martins Creek, Pa., and others are figuring on erecting a new cement plant.

The New Castle Cement Co. has been incorporated at New Castle, Pa., with a capital stock of $50,000.00.

The Great Northern Portland Cement Co., Baldwin, Mich., shipped its first consignment of cement the first of August.

The American Cement Co., with head office at Philadelphia, Pa., has been enjoying a good run of business the past month.

The Martins Creek (Pa.) Portland Cement Co. has a contract to supply $200,000.00 worth of cement to the commissioners of the District of Columbia.

The Consolidated Cement Co., Eddyville, N. Y., has purchased three locomotives for use on the cement railroad between Eddyville and its plants at Binnewater.

The Independence Portland Cement Co., at Portland, Me., with a capital stock of $2,000,000.00, has been incorporated, with M. W. Baldwin, president, and W. A. Castner, secretary.

A miniature physical laboratory for the manufacture and testing of Portland cement will be installed in the L. C. Smith College of Applied Science, in the near future, at Syracuse, N. Y.

The Hercules Cement, Coal and Gas Co. has been incorporated at Washington, D. C., with a capital stock of $1,000,000.00. The incorporators are: W. Myran Reynolds, Thomas M. Lattimer and H. H. Lancy.

The new plant of the Egyptian Portland Cement Co., Fenton, Mich., has been started up and is turning out 1,200 barrels of cement a day. The company contemplates beginning work at their Holly plant at an early date and will erect their plant the same size as that at Fenton.

Concrete Tools.

We have just received a neat little folder from W. H. Anderson & Sons, 21-31 St. Auburn Avenue, Detroit, Mich., which is devoted to the illustration of the various tools used in concrete work of all sorts, such as special shaped blocks, side walks and curbing. This is not the only line that this firm manufacturers, since we know that they have built derricks for the Truesdell Marble Co., at Port Huron, and another for J. J. Koerber, which is to be used in the construction of the new library building at Port Huron. They also recently shipped a new tool cutting machine to the Transvaal, Africa. This machine only weighs 80 pounds and is used for cutting the teeth on stone chisels. In fact, the line of machinery and tools manufactured by this firm is so varied that they are pretty good people to write to for anything that you do not know where else to go for. In nine cases out of ten they will be able to fix you up.

A New Cement Brick Machine.

The Cement Products Co., Wilmington, Del.—You will probably be interested to know that our company have in operation a new cement brick machine, making forty-five bricks per minute, and this is one of several we have going, but is far in advance of anything we have. This machine is the one we put into our five thousand-dollar plants.

The Davenport (Iowa) Granitoid Co. has recently been incorporated with a capital stock of $10,000.00.

Joseph Blackburn and others are organizing a company at Columbus, Ohio, to manufacture artificial stone.

A company has been organized at Sac City, Iowa, with a capital stock of $10,000.00 to manufacture artificial stone. The officers of the company are: Phil Schaller, president; Asa Platt, vice president; John A. Soderstrom, secretary, and E. N. Baily, treasurer.

The Monongahela River Stone Co. has been incorporated at Morgantown, W. Va., with a capital stock of $50,000.00 to manufacture artificial stone. The incorporators are: C. L. Edmunds, Clarksburg; S. M. Prince, J. L. Hatfield, J. H. Krepps, J. L. Peabody and others.

The Granite Brick Co., Glen Falls, N. Y., has recently completed and started up a plant for the manufacture of sand-lime brick with a capital stock of $75,000.00. The incorporators are: D. P. DeLong, Glen Falls, president; Granville M. Ingalsbe, Sandy Hill, vice president and general manager; A. Z. DeLong, Glen Falls, treasurer.

Plaster.

The National Plaster Manufacturers' Association.

Meets Semi-Annually.

H. E. DINGLEY, Syracuse, N. Y., ...President
A. H. LAUMAN, Pittsburg, Pa.,.....First Vice President
L. G. POWELL, Toledo, Ohio,.....Second Vice President
JAS. LEENHOUTS, Grand Rapids, Mich., Third Vice President
ALEXANDER FORRESTER, Cleveland, Ohio,.....Treasurer
E. H. DEFEBAUGH, Louisville, Ky.,.....Secretary

Official Organ, ROCK PRODUCTS.

Ohio Gypsum Deposits.

(*Continued From Last Month.*)

It is very evident that these deposits were all formed in the same manner. The thickening of the limestone and the thinning of the gypsum is a perfectly natural result of the method of their formation, if we accept the theory of deposition by evaporation and concentration followed by precipitation. If the process of deposition were interrupted by the influx of fresh water, we would expect that channels would be cut in the gypsum which had been laid down and was still soft and loose, and it is also natural that this erosion should be in curved form and in the same general direction. When later limestone was laid down, the deepest waters would give the deepest deposit and to some extent level up the cuts which had been made by erosion.

The Chemical Character of Gypsum.

The thickness of the gypsum, will vary from six to nine feet. However, four feet of good gypsum could be mined with economy at any point where a sufficient area of it was available.

As has been previously stated, in chemical character it is one of the purest as is shown by the following analyses by Prof. N. W. Lord taken from the Geological Survey of Ohio, volume VI, pages 700 and 701:

Lime	32.52	32.76	32.35
Sulphuric Acid. . .	45.56	46.20	46.38
Water.	20.14	20.00	19.70
Magnesia.	0.56	0.03	0.54
Alumina.	0.16	0.29	0.60
Insoluble Residue..	0.68	0.46	0.91
	99.62	99.74	100.48

It is to be noted that the total impurity of average of three is less than 2 per cent.

While the distribution of gypsum in Ohio covers considerable territory, that of economic value is all found in two townships, that of Portage township, in Ottawa County, the scene of the present developments, and Margaretta township, in Erie County, which is undeveloped at the present time. Some sixty acres of valuable gypsum in Ohio have already been worked out.

It is a well-known fact that gypsum occurs in small deposits throughout the greater range of the water lime or lower Helderburg formation, in Ohio and New York. However, in Ohio with the exception of the points above mentioned, no deposits of sufficient extent or thickness to justify development, have been located. The Geological Survey reports of Ohio cite numerous outcrops, among which are notable those in the vicinity of Sylvania, Lucas County. Aside from these outcrops, in the deep wells drilled in Northern Ohio, it is very seldom that the drill fails to penetrate gypsum at some point.

Three feet of pure fibrous gypsum have been reported from the vicinity of Upper Sandusky, at a depth of one hundred and fifty feet.

In a deep well drilled in 1886 at Sandusky a bed of nine feet was reported by the drill at a depth of two hundred and seventy-two feet. This would place the gypsum deposits about one hundred and fifty feet below the base of the Corniferous limestone. In the next 800 feet of rock passed by the drill, gypsum was reported at a number of points.

There are other considerations which tend to show that gypsum of value in Ohio lies well within the Water-Lime formation and probably the upper form of it.

The natural dip of the limestone rock in Ohio is to the Southeast. On Marblehead we have what is undoubtedly the Corniferous limestone, and in passing West over a comparatively level territory for about twenty-five or thirty miles we arrive at limestone which is undoubtedly water lime, immediately on top of the Niagara group of rocks.

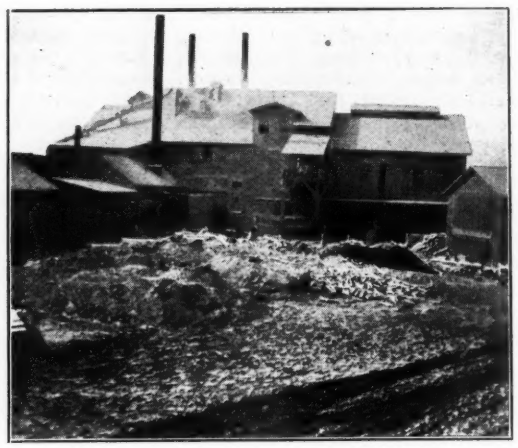
The rise of the rock from Marblehead to Port Clinton would be sufficient to bring about 150 ft. of water lime above lake level at the latter point.

The fossil life, if any, found in the gypsum deposits of Ohio is indistinct. This is perfectly natural, since the conditions under which gypsum would form, are extremely unfavorable to life of any sort. However, the lithological or physical character of the limestone rock which accompanies the gypsum deposits is very similar to that found in portions of the water lime or lower Helderburg formation.

Nature of Deposits.

The nature of the deposit on the South side of the Bay is shown by the following drill record:

Earth	30 feet	
Rock	7 feet	
Plaster and rock	6 feet	
Interstratified plaster	3 feet	6 inches
Plaster and rock interstratified	4 feet	
Gray plaster	9 feet	
Plaster	3 feet	10 in.
Rock	4 feet	
Plaster	6 feet	4 in.
Rock	1 foot	
Plaster	3 feet	2 in.
Rock	6 feet	



Port Clinton (Ohio) Plant of the U. S. Gypsum Co.

The term rock refers to limestone; gray plaster to a gypsum porphyry which consists of nodules and crystals of gypsum varying in size from a grain of wheat up imbedded in limestone; plaster, of course, refers to gypsum. The three feet two inches of gypsum noted in the bottom of the column is the bed beyond which it is not safe to go, on account of the water.

The records begin in Bay township on the Northern side of the Bay in Ottawa County, and show no gypsum of value until a point about one and one-half miles Southeast of Port Clinton. From this point on East along the Bay to Gypsum Station the gypsum is found at intervals.

The depth of the gypsum from the surface at the Fletcherville location varies from twenty to thirty feet. The variable thickness of the limestone and gypsum is shown by the measurements taken from the old quarry of Marsh & Co., No. 1, on the North side, and No. 2 on the South side. This is between the two points measured, not over two hundred to two hundred and fifty yards.

NUMBER 1.

	feet.	inches.
Limestone	1	
Gypsum	6	6
Limestone	1	
Gypsum	5	
Limestone	7	
Gypsum	4	

NUMBER 2.

Limestone	10	
Gypsum	2	
Limestone	1	6
Gypsum	6	6
Limestone	6 in. to 1 ft.	
Gypsum	3	

The top bed of gypsum is frequently absent and what is called boulder gypsum is frequently encountered in its place.

These boulders consist of large spherical masses of gypsum which are suggestive of concretionary origin. At first these were discarded as of no value, but later it was found that they consisted of a very pure gypsum. These boulders were considered undesirable on account of the numerous dark bonds running through them, which were supposed to be shale. These bonds were, however, organic matter which were removed in the calcining.

The gypsum which is encountered at a greater depth is somewhat different in physical character. The samples brought up by the core gradually become more clear and transparent until in some cases an almost transparent gypsum is found. The gypsum which is mined now is opaque and candy-like in appearance. It is white and interstratified with numerous thin bituminous bands which give it a general gray effect. During calcination this bituminous matter is all removed, and a very white product is the result. The water which comes in with the gypsum deposits in this section, is all highly impregnated with sulphureted hydrogen, commonly known as sulphur water. It is all potable water, however. It is necessary to operate pumps day and night. A few openings have been drowned out by striking crevices and admitting lake water.

Method of Winning.

Until 1899 the gypsum was all won by open quarrying. Since that time it has been done by driving entries in from the old quarry opening and mining. Recently several shafts have been put down and the entries run from their base.

In some cases the roof is very uncertain; in others a good roof is available. It is necessary to do a great deal of timbering, in order to make it safe. In both cases an incline is run from the mouth of the mine to the storage sheds where the gypsum is permitted to air dry, since it can not be reduced very well unless it is thoroughly dry. The general practice is to first air dry, pass through a crusher, then through a rotary dryer, after which it is ground to a moderately fine powder before it passes to the calcining kettles.

It is a curious sight, indeed, to see a dry powder boil just like water, as the calcined gypsum does during its preparation; and when the gates of the kettles are opened, this dry powder flows out with apparently as much freedom as some of our most mobile fluids.

Comparing the production of calcined plaster from Ohio for the last two decades and estimating that of 1904, we see a very remarkable increase in the last ten years.

1884 about	6,500 tons.
1894 about	21,000 tons.
1904 estimated	160,000 tons.

This enormous increase is almost entirely due to the introduction and use of hard wall or sanded plaster.

These hard wall plasters or dry mixtures of sand and calcined plaster have some retarding agent which causes the plaster to set with sufficient slowness to permit a smooth and even spreading when the whole is mixed up into a mortar. The hard wall plaster plants are the largest consumers of gypsum in Ohio.

Some of the minor uses of gypsum are for fertilizing, stucco work, crayon, in making potters' moulds, in the manufacture of plate glass and as a retarder in the manufacture of Portland cement.

Michigan gypsum will be described later.

S. V. P.

View in Quarry of the U. S. Gypsum Co., at Port Clinton, Ohio, Showing Three Mine Openings.

Stone.

The Cost of Crushed Stone.

The cost of production of crushed stone, will vary of course, with local conditions and the nature of the stone which is to be worked. The physical character of the stone, that is, whether it is tough or brittle, is quite a factor in the cost of the production of stone for any purpose. The more especially is this true of crushed stone, because of the reduction necessary. A brittle stone requires a higher crushing strength than a softer, more tough, elastic stone, and will cost less to get into macadam size, since the blasting on the brittle stone will crack and shiver it up so that less sledging will be necessary before it enters the crusher. Secondly, the blow of the crusher will separate it more with one stroke than it will with tough stone. Of course the brittle stone will produce more fine material, but that does not give any material increase since, we have noted the last few months where more of this fine material is being utilized both as surface for macadam roads and in concrete for various purposes, such as sidewalks, building blocks, foundations for machinery, and even bridge work. It is probably safe to say that the cost in Ohio of producing crushed limestone is, at the most modern and best equipped plants, about 24 cents per ton. It probably may be said with equal truth that there are other quarries producing crushed stone which does not cost them less than 40 cents per ton. It must be borne in mind that this is not a yard. The average weight in a cubic yard of stone is 2,475 pounds. It is probable that the major portion of crushed stone in Ohio, comes in the neighborhood of, at the present time, August 1903, about 30 cents per ton. The selling price varies all the way from 50 cents f. o. b. to $1.00. The average price of labor for such work was in 1901 about $1.48; for 1902 about $1.64, and in 1903 will probably run very close to $1.75. It will be between $1.70 and $1.75, no doubt.

A Stone Crusher's Experience.

H. O. Duerr, Buffalo, N. Y.—Apparently there is no business, which is taken up, requiring the amount of capital that the stone crushing business does—and which seems to be so little understood by people who go into it, and which is entered with so little information and with misleading conditions. The writer took up the question of stone crushing six or seven years ago, and at that time could obtain absolutely no authentic figure as to the cost of producing crushed stone, for the simple reason that few contractors keep an accurate account of the cost of production and cost of maintenance of plant. The only figures to be obtained were from the manufacturers of stone crushing plants, and these figures come from the traveling agents of the various manufacturers of stone crushers, and were obtained by them in a more or less off-hand way, so that they were unreliable. The information received from the agents of the various stone crushing plant manufacturers, is frequently misleading; the agents being naturally ambitious to sell their plant, giving only the most desirable figures. In addition to this, their advice as to the kind of plant to be used, for producing a certain class and quantity of out-put, is sometimes wrong.

The first plant which I erected was to produce 750 cubic yards of 2½-inch stone, per ten hours—that would mean stone which would pass through a ring not larger than 2¾ inches nor smaller than 1 inch. It was estimated that this plant, complete, would cost $15,000.00. The plant was erected and the greatest output obtained was 500 cubic yards per ten hours. When I took the matter up with the manufacturers, the excuse given for not getting a greater production was—first, that we did not keep the crusher filled; second, that the stone was of entirely different nature than they had ever crushed before. In answer to the first question; I will say that in the seven years' experience which I have had, and during which time I have put up about fifteen plants, I have found that not a single crushing machine will produce the output claimed for it.

It is impossible for any contractor to regulate his work so as to keep the crusher constantly filled, and again it is impossible to build a plant which can be maintained without break-downs of various kinds. In answer to the second question, the quality of stone has so much to do with the quantity that can be crushed, in any particular class of crusher, that the average agent is not competent to judge what can be done with a certain size of machine, upon a particular kind of rock, without first having made practical tests; then again, some plants as sold by the manufacturers are made to sell at as low a price as possible, and therein the durability suffers.

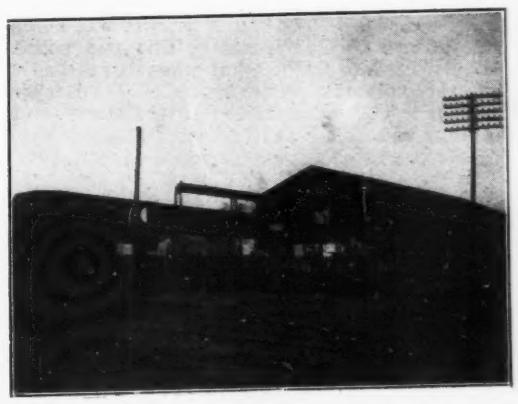
This is not wholly the fault of the manufacturer; it is the fault of the contractor, inasmuch as he always wants to get everything as cheap as he can, and does not take into consideration the expense which arises in the course of operation, due to the plant being made entirely too cheap and too light. In the seven years that I have been in the business, I have been instrumental in putting up the largest plants in the country and producing in one year as high as 800,000 tons of crushed stone. My experience on the first plant was, that instead of the plant costing $15,000.00 to produce 750 cubic yards per day, it cost $25,000.00, and instead of our being able to run ten hours a day, we averaged during the season but 6½. The balance of the time was lost by reason of break-downs, inability to get stone to the crusher regularly, bad weather and other contingencies. The expense of maintaining the plant, for repairs, renewals, etc., was about $8,000.00, or 30 per cent. of the cost of the plant, for one season. The amount of stone produced, in this time, was 107,500 cubic yards—total product. Of this amount, 82,000 cubic yards was what was classed as 2½-inch stone.

During the first season, I carefully watched the operation of the plant and noted wherein it was defective, and during the winter I tore down the plant, re-constructed it at an expense of $7,000.00, making the total cost of the plant $32,000.00 up to that date, with the result, however, of producing with the same machine, with its improvements, in the following season, a total output of 190,000 cubic yards, and losing but 5 per cent. of the time, all told, and an expense of only $4,000.00 for repairs and renewals. I have visited various plants throughout the country, which have been furnished to contractors, and noted that the experience of other contractors has been the same as mine.

From my experience it seems there is no other manufacturing business where capital is invested with so little positive information as to costs and returns as in the crushed stone business, and there is no other business that so soon eats up the capital invested, to say nothing of the profits. Now, as the business is in its infancy, but is growing rapidly, it seems to me that those who contemplate entering it should do so carefully. They should not depend entirely upon the figures or advice of manufacturers of machinery, but should carefully study the conditions, and then, after going over the matter thoroughly, allow plenty of margin in their estimates as to the capital required and profits possible. They should also be careful not to take contracts at so low a figure that there is no room for carrying out the advice herein set forth.

Then, before going into the business, the man who has had no experience in crushed stone should make it a point to employ a man of experience to design and set up his plant, even though the expense of doing so may seem out of proportion to the apparent gain thereby. By doing this, he can avoid some of the troubles that have fallen to my lot, and if he does not do it he stands a good chance to pay dearly for his lessons in the crushed stone business, before he has learned enough to handle it successfully.

Stone Yard of Ortman & Co., Detroit, Mich.



Stone Yard and Works of R. Robertson & Co., Detroit, Mich.

Norcross Bros. Reorganizing.

Some of our readers seem to have confused the Norcross Co., 269 West River Street, Cleveland, Ohio, with Norcross Bros., of Boston and Worcester, Mass., who have had some financial difficulties recently, necessitating a reorganization. This Cleveland firm was one time known as Norcross Bros., but is, and has been for some time, distinct and apart from the contracting firm of Norcross Bros., consequently this Cleveland firm was in no way affected by the receivership business of the Norcross Bros. The Norcross Co., of Cleveland, is building a new plant at Brooklyn, Ohio, which is to be started in a short time. They handle foreign and domestic marble, glass and marble mosaic, brown and red sandstone, slate, granite and fancy brick. In this connection, it is in order to mention that the creditors of Norcross Bros., Worcester, Mass., have in hand a plan of reorganization for that company. The plan in hand involves the forming of two corporations, one to be called the Construction Co., whose business it will be to work out contracts and continue the business in a general way, and the other to be a holding corporation, which will own the stock of the construction company and apply the earnings and pay the claims against the Norcross Bros. Co., and O. W. Norcross. The holding company is to be known as Norcross Bros., Inc. By this plan it is thought that the business of Norcross Bros. can be continued without much hindrance under the management of Mr. Norcross. We will be pleased to see this, or some similar plan go through, because they are good business men and their present crippled condition is due to labor troubles that held up their work and prevented their completing contracts on time, and it is not right that they should be made to suffer because of matters beyond their control.

What is known as the Northwestern Stone Crusher, Cedar Rapids, Iowa, is being enlarged and put in shape for a busy time this fall.

The Sturgeon Bay (Wis.) Stone Co. lost a scow valued at $8,000.00, in a recent storm on Green Bay. The scow was loaded with about 100 cords of stone.

The property of the Buena Vista Freestone Co., Buena Vista, Ohio, including the stone sawmill and some stone land in that country, is to be sold at sheriff's sale September 2.

Stone Yards of Detroit.

The city of Detroit seems to be well supplied with large stone cutting equipments, which work up little else than sandstone and Bedford lime stone. Judging by the number and size of these yards it is evident that a great deal of cut and crushed stone is being used in Detroit. They have a number of large stone cutting plants with several gangs of saws and planers in each.

R. Robertson has a plant equipped with a traveling crane of a thousand pounds capacity which has a track over 300 feet long, and running right through the shop. This plant is equipped with saws and F. R. Paten planer and Lincoln Iron Works planer. He employs quite a gang of men all the time.

F. A. Ortman has a yard at 1099 Wabash Avenue, and a stone cutting plant equipped with saws, etc.

The American Granite and Sandstone Co. is taking steps to further develop its stone property near Fort Collins, Colo.

The Waynesboro, (N. C.) Granite Co. has a contract to supply granite to contractors for the new custom house at Baltimore, Md.

The Bellevue (Ohio) Stone Co. has secured a contract for furnishing two miles of pike in the vicinity of Chicago Junction, Ohio.

The Cordell Stone Manufacturing Co. has been incorporated at Guthrie, Okla., with a capital stock of $2,700.00. The incorporators are: J. C. Harrell, J. H. Caldwell, W. P. Seawell and W. A. Bills.

The Jacob Clark Stone Co. has been incorporated at Newark, N. J., with a capital stock of $25,000.00. The incorporators are: Wm. H. Travis, Hale Eddy, Fred C. Johnson and Jacob Clark.

Reports from Hartford, Conn., state that W. B. Case has resigned as manager of the New England White Marble and Granite Corporation, and Capt. H. B. Philbrick, the president, has been made manager.

The American Stone Novelty Co. has been organized at Detroit, Mich., with a capital stock of $60,000.00, by three Detroit men, William E. Higginbotham, E. Corliss Kelly and Lawrence W. Hogg.

The North Adams (Mass.) Savings Bank has foreclosed a mortgage on the property of the North Adams Marble and Milling Co., at Natural Bridge, and it is said that the property is to be sold September 2 at auction.

Reports from Nashville, Tenn., state that Hon. B. A. Enloe, secretary of the World's Fair Commission for Tennessee, is taking steps to secure a magnificent exhibit of Tennessee marbles at the St. Louis Fair.

Reports from Pittsburg, Pa., under date of August 17, tell us of a strike being inaugurated among the stone cutters of Allegheny County. The men had been receiving 50 cents an hour and asked for 60 cents.

The plant of the Ionia (Mich.) Stone Co. was recently destroyed by fire, entailing a loss of $25,000.00. Steps were immediately taken to put in a new equipment of machinery as quickly as possible to take care of the orders.

J. T. Wyatt, Salisbury, N. C., just keeps pushing things in the granite line down that way. One of his specialties is granite posts to go around grave yards, land markers, etc., and he furnishes granite for all kinds of other purposes.

The Cleveland (Ohio) Stone Co. is installing a big air compressor plant at quarry No. 6 in North Amherst, Ohio. The plant will consist of machinery supplied by the Ingersoll-Sergeant Drill Co., and the plant will cost about $25,000.00.

The Brocton Trap Rock Co. has been incorporated at Kittery, Me., with a capital stock of $175,000.00, to do a stone and contracting business. The incorporators are: Charles P. Holland, Charles Wesley Mory, Lewis Kennedy Morse and Moses A. Safford.

The A. A. Bellamy Co., North Adams, Mass., started to blast away rock which was on the old campus grounds at that place, which, instead of turning out to be a boulder, proved to be the outcrop of a ledge, and the result has been the opening of a quarry at an unexpected location, which it is said they will continue to work as long as the stone proves good.

Mr. O. Berggren, proprietor of the Oxford (Mass.) Marble and Granite Works, has had an unfortunate time with a couple of polished granite columns, for the Larned Public Library Building at that place. The rough granite was shipped from Milford to Quincy where this was polished and then back to Oxford, but when it reached Oxford the columns were broken. Mr. Berggren has a contract for furnishing all the stone for the building, and this was the last and most expensive piece.

The Sky Blue Marble and Onyx Co., of Riverside, Cal., seems to be enjoying quite an era of prosperity, and it is said to produce some of the finest building stone in the country. In addition to getting out stone, they also operate two lime kilns to convert this blue marble into white lime. A ledge of blue marble of about 165 feet has recently been uncovered. Judge E. A. Tucker is president and general manager of the company, with Ed Tucker as superintendent, and Harry Wallace as quarry foreman.

Quarries.

The National Quarry Owners' Association.

D. McL. McKAY, Chicago, Ill.....President
W. H. WALLACE, Bay Port, Mich.....First Vice President
F. A. BROWN, Aberdeen, S. D.....Second Vice President
S. M. HALL, Bucyrus, Ohio.....Third Vice President
E. H. DEFEBAUGH, Louisville, Ky.....Secretary-Treasurer

Official Organ, ROCK PRODUCTS.

Jacob B. Millard is opening up a new quarry near Annville, Pa.

William Gray & Son, of Philadelphia, Pa., have reopened the quarries of High Island.

Carl Anderson, of Port Allegheny, Pa., has leased the quarry there formerly operated by John Anderson.

A new quarry has been opened by Harry Deitz & Sons, Myerstown, Pa., to get out cement and furnace stone.

John Shay, Ansonia, Conn., has been busy at his quarry the past month getting out large blocks for abutment works.

Frank Lessert of the Kaw Indian Tribe, is said to have discovered a fine bed of marble on his farm near Guthrie, Okla.

The Cumberland Stone Co., Crab Orchard, Ky., will increase its facilities by installing additional machinery for quarrying.

Mr. J. Dukes, of Rockford, Ill., has leased the quarry belonging to that city and has a contract to furnish crushed stone for the city's use.

The Queen City Quarry Co., East St. Louis, Ill., is rapidly getting things in shape on its quarry property at Alton, Ill., to quarry and crush stone.

The Northwestern Construction Co., Astoria, Ore., has opened up its quarry at Bugby, Ore., and will close down one that has been operated at Quincy.

The granite quarries of Clark's Island, Me., which have been idle for a year, are to be re-opened by J. C. Rogers, who has several large orders for stone to fill.

The American Granite and Sandstone Co., Denver, Colo., with quarries at Fort Collins, Colo., contemplates enlarging its operations and making extensive improvements.

Manager L. W. Coleman, of the John T. Dyer Quarry Co., Norristown, Pa., is said to have made a record run recently, shipping from four crushers thirty cars of crushed stone in one day.

Vaughn & Whitney, who own onyx claims in the Clendo district, near Guernsey, Wyoming, have taken out a piece of onyx weighing 25 tons, which they will polish on one side and send to the St. Louis Fair.

The Union Carbide Co., of Duluth, Minn., has made arrangements for opening up a limestone quarry near Sault Ste. Marie, Mich., where 200 tons of limestone a day is to be quarried for use by this company.

The Rockport (Mass.) Granite Co. recently fired off a blast containing 15 kegs of powder. The big blast was set off by Foreman George Taylor, and seems to have been a success, for there was 16,000 tons of rock dislodged.

The Sibley Quarry Co. has been incorporated at Sibley, Mich., to operate on the stone land formerly owned by Mr. Fred D. Sibley. The officers of the company are: E. D. Church, New York City, president; E. D. Church, Jr., New York City, vice president; Austin Church, Trenton, secretary, and K. J. Sundstrom, Trenton, treasurer and general manager.

F. T. Fahrenhamp, J. W. Green, William Maug and others have incorporated a company at Gonzales, Tex., with a capital stock of $15,000.00, to quarry stone. They will get out what is said to be a very fine blue sandstone.

The Montgomery & Shanley Stone Co., who operate quarries and crushers near Brownsburg, Pa., have been so loaded with orders during the past month that they are putting in electric lights and have been operating day and night.

B. F. Richardson, of Philadelphia, Pa., and T. F. Ward, of Ridley Park, Pa., have secured a contract to furnish about 200,000 tons of granite for Government rip rap work. The stone is to be taken out at Ward's quarries, at Crum Lynne.

The Fort Collins Development Co. has been incorporated at Fort Collins, Colo., with a capital stock of $100,000.00, to develop stone quarries and engage in building operations. The incorporators are: Jesse Harris, Wm. Metcalf and Myron H. Akin.

The Delaware Valley Stone Co. has been incorporated with a capital stock of $125,000.00, with registered offices at 83-85 Montgomery Street, Jersey City, N. J. The company will operate quarries and deal in stone. The incorporators are: Phillip Corcoran, Peter Yoost, Frank J. Myers, James Ford and Alexander T. Rice.

A Big Thing in Pneumatic Quarry Equipment.

In the article on Ohio sandstones in ROCK PRODUCTS for August mention was made that the Cleveland Stone Co. was installing a compressed air plant at quarry No. 6 at South Amherst, Ohio. This quarry is one of the largest in the world, and the compressed air plant being erected there is also one of the largest in the world. Compressed air has been used quite extensively in the stone quarrying business, as well as for operating tools in the shop for cutting and dressing and has been making a very rapid progress the last year, but this plant offers particular interest on account of its immense size. In short, it marks a distinct step in quarry work on a large scale. The Ingersoll-Sergeant Drill Co., New York City, are furnishing the entire equipment and will put it in running order. The following description of the plant appeared in the current issue of *Compressed Air*:

"As it was a very large venture and required a concern of high standing and much experience to successfully handle it, the fact that the order was given in the end practically without competition shows a pleasing recognition of that company's ability to cope with it.

"The plant is to consist of two large Ingersoll-Sergeant Corliss condensing air compressors, 48 inch stroke, semi-tangye frames, having a combined capacity of 9,215 cubic feet free air per minute, steam and air ends compounded and the highest refinement in economy throughout; also three Stirling water tube boilers, 258 rated horse power each, to carry 180 pounds working steam pressure; two independent jet condensers; two duplex boiler feed pumps; two duplex auxiliary low service pumps; three Roney mechanical stokers; one fan draft; water purifier system, etc., including some 10,000 feet of large air pipe and fittings as the main feeder around the quarry.

"Among the machinery to be handled are nine very powerful hoisting stations, handling 22 derricks, some 15 channeling machines, 15 rock drills, pumps, blacksmith fires, steam hammers, grindstone and shop engine.

"So many radical changes in the whole system of quarrying are in contemplation that it is claimed that the output will be increased from 25 to 50 per cent. with the same labor force, while the coal consumption will be cut down two-thirds and the cost of production cheapened to a very material extent. It is said that this plant will give a cubic foot of air at less cost than any other plant in the world. It is expected that this new plant will be in operation by September next. Its completion will be awaited with more than the usual interest, as its success will undoubtedly lead other concerns to follow the example."

The Attalla Stone Co. has been incorporated at Attalla, Ala., with a capital stock of $20,000.00. The incorporators are: K. M. Morague, C. B. Forman and others.

The Deer Lick Oilstone Co. has bought the old whetstone factory founded at Jeffersonville, Ind., more than seventy years ago, by Mr. Louis, and the plant is being moved to Chagrin Falls, Ohio.

Artificial Stone

Lime-Sand Brick.

There is great activity in lime-sand brick plant construction this summer, and the fall will probably see no less than 25 or 30 plants in successful operation. Those machinery shops which are building machinery for this purpose are working overtime, for those who have decided to go in the business are very impatient to get at it.

While there are many who still lack confidence in the safety of lime-sand brick as a building material, there are many who have confidence.

The recent work done by the Ohio Geological Survey will do much to eliminate uncertainty on many points when the report of this work appears in print. The conclusion drawn by the Survey officials is that an entirely satisfactory and safe lime-sand brick can be made in a commercial way.

Out of a large number of samples examined by very severe freezing tests only such as contained a marked amount of impurities showed any sign of weakness. Most of these samples carried as much as 10 per cent. of lime and showed crushing strength ranging from 5,000 to 8,000 pounds per square inch. The crushing strength was frequently greater after the freezing test than before, due to the fact that there was, no doubt, some free hydrate of lime, which, when moistened, would take carbon dioxide rapidly from the air and thus form artificial limestone in place of hydrate of calcium. This of course would not add to the tensile strength, since this calcium carbonate could act only as a filler, while, had this lime hydrate been entirely converted into the hydrous silicate of lime, the bond would have been from sand particle to sand particle. Very good evidence of this was shown in the fact that while the crushing strength frequently increased, due to the soaking in water and exposure to the air, the tensile strength seldom increased to any marked degree. The samples which showed failure were those which had large amounts of clay in them. Feldspar did not show the same tendency to break down under frost as those which had clay as an impurity did.

While these high crushing strengths were obtained in manufacturing where everything was under actual control, it is hardly to be expected that in the ordinary run of manufacturing the crushing strength of the finished material, which is usually made with more or less variation as to the per cent. of lime and of moisture in each brick, would show such crushing strength as this. However, there should be no serious difficulty in manufacturing sand-lime brick with a crushing strength ranging from 3,500 to 5,000 pounds per square inch.

There is no question any more as to the quality that can be made. The sand-lime brick, which has received proper preparation before going to the press, has received sufficient pressure, contains sufficient very fine particles in the raw material, and has from six to eight hours in the hardening cylinder, after the steam pressure has been brought up to 120 to 125 pounds, will give an entirely safe building material, provided there is not more than a very small amount of clay present.

These remarks apply to all the systems in use to-day in the United States. The various systems and various patents will, for the most part, furnish a good brick if handled properly. The system or process of operation that should be adopted is simply a question of local conditions, economy of manufacture and first cost of plant.

The Haines Stone Manufacturing Co. recently organized at Cambridge, Ohio, with a capital stock of $25,000.00 has elected officers as follows: L. G. Haines, president and general manager; S. W. Price, secretary-treasurer.

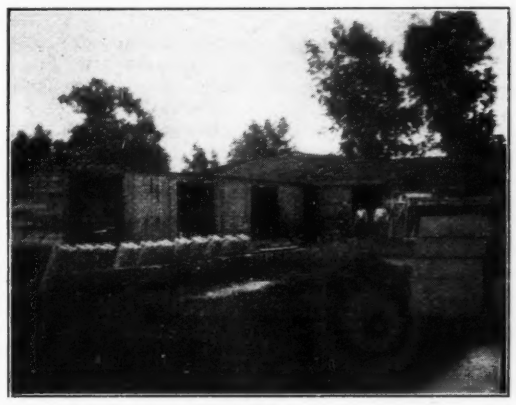
The American Cement Post Co. has been incorporated at Marshall, Mich., with a capital stock of $100,000.00 to manufacture fence posts and building supports. The incorporators are: S. F. Dobbins, president; F. A. Stuart, vice president; A. E. Eacon, secretary-treasurer.

Cement Brick and Cement Block.

The present time seems to be a very good one for the cement block and the cement brick machine man to push for business, owing to the fact that Portland cement has reached a very low level in price—a price at which a fair quality of cement brick can be made at a price which will allow it to enter the market at par with common clay brick.

The cement block people of course derive the same advantage as do the cement brick people from the reasonable price of Portland cement, which gives them a chance to do business. The cement block people , perhaps, have an advantage over the cement brick men in the fact that a cubic foot or cubic yard of cement block can be laid in a wall at a somewhat lower cost than the same amount of ornamental or rock faced brick.

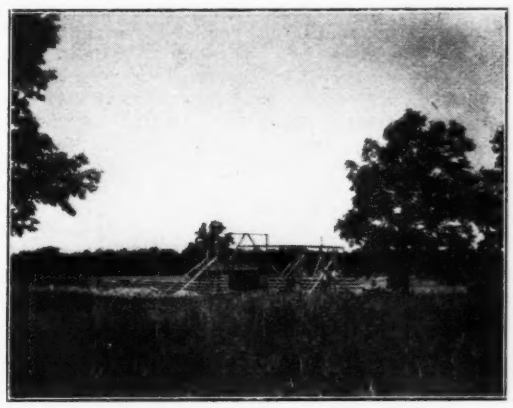
There are a number of machines on the market



Cement Brick and Block Plant of Marcott Forbes, Port Huron, Mich.

for the manufacture of cement block. The Palmer Winget and Normandin machines have received considerable exploitation. At the plant of Marcott Forbes at Port Huron, which is shown in the illustration accompanying this article, the Palmer machine is used and also a Macintosh cement brick press.

It appears to me after a visit to several cement block plants, that the manufacturers of cement block are too anxious to dry their block rapidly. This has a tendency to produce cracks, which are really immaterial, since there is abundance of strength after it is hardened, yet when the novice or general public looks at this brick or block and sees the cracks in them they are ready to criticise and find fault with them. These cracks can perhaps be avoided in a large measure by not allowing the



Cement Brick and Block Plant of The Artificial Stone and Construction Co , Kalamazoo, Mich., A. E. Paulson, Mgr.

blocks to take their first drying out too rapidly. It is a well known fact that to get the best results in Portland cement it should be kept pretty wet for several days. Now, the moisture used in the manufacture of cement block, as a rule, is none too great, and so far as we know, manufacturers do not moisten the block after they have once been pressed. The properly dried and properly made cement block can not help but make an elegant building material, not only from the point of strength and durability, but appearance as well. The same may be said of cement brick.

At Battle Creek, Mich., the Artificial Stone and Construction Co. is using the Normandin machine with excellent results.

There are several other cement block machines than those which have been mentioned. It seems to me that of all the cement block machines, almost any of them will produce a good block. It is merely a question of economy in manufacture. The main thing in the manufacture of cement block and cement brick is the use of a good Portland cement, enough of it and the proper mixing of the concrete, which is to form the block. The machines will do their part so far as the quality of the product is concerned.

It may be of interest to describe briefly the general practice in the manufacture of cement block, since very little has appeared in print.

The sand and cement can be put automatically in proper proportions into a mixing hopper, which is practically a mechanical mixer, and sufficient water incorporated here. This material which may now be called concrete, is conveyed by screw conveyer or continuous belt to the brick press, which will mold from 6 to 8 brick at one stroke of the plungers. They are molded upon a board so that they need not be moved. The action of the press pushes this board out on to a belt conveyor which carries it out to a storing shed, where they are set up still on the board, and allowed to stand from one to two days when they may safely be moved from the board.

A rough-faced brick can be made with equal facility as a plain brick. It is simply a question of the shape of the die used in the press. Thus it is seen with a properly equipped plant that the amount of labor need not be excessive.

It will require one man at the brick press and probably one man at the mixer, and another to remove the brick from the conveyor to handle a plant with from 20,000 to 24,000 brick capacity in ten hours.

The cost of production of cement brick will run from $3.50 up. The cost of the cement and sand will be the main factor, so it is evident the brick made at a cost of $3.00 to $3.50 per 1,000 can not have a great proportion of cement in them. A plant for the manufacture of cement brick with a capacity of 20,000 per day need not cost more than $10,000.00 or $11,000.00.

These plants are comparatively simple. The largest portion of the plant being the storage shed where the brick may be protected from the weather for a few days.

Harris Shade has been building a new concrete plant at Lexington, Ill., the past month.

The Portland Hollow Block and Tile Co. has its big factory at Portland, Ind., in operation.

The Norton Silica Brick Co. has been organized at Roanoke, Va., with a capital stock of $200,000.00 to manufacture sand-lime brick.

The Saginaw (Mich.) Sandstone Brick Co. has installed a new press during the past month, doubling the capacity of its plant.

McManus & Tucker have a new concrete manufacturing plant at Keokuk, Iowa, and make a specialty of cement and gravel paving blocks.

The Cement Products Co. is a new industry at Denver, Colo., making concrete building blocks. The leading spirit in the enterprise is J. A. Ferguson.

Mr. E. H. Powers is figuring on erecting a plant to make artificial stone at Carmel by the Sea in California, according to reports from the Monterey (Cal.) *New Era*.

Benjamine F. Lockwood, of Lyons, N. Y., is inventor of a process of manufacturing curbing, burial vaults, etc., of cement, and is organizing a company to erect a plant.

The Standard Stone Co. has been incorporated at York, Pa., to manufacture and sell artificial stone. Capital stock $50,000.00, and the incorporators are: William H. Hoke, C. A. Thomas and M. G. Collins.

The Buffalo Sandstone Brick Co. has been incorporated at Lancaster, N. Y., to manufacture sand-lime brick. The incorporators are: Jno. C. Graves, president; Wm. E. Plummer, vice president; Frank Hossinlopp, treasurer.

The Ransome Concrete Fireproofing Co., Cincinnati, Ohio, has been declared insolvent by Referee George L. Williams. It seems that the principal stockholders in the concern are its principal creditors and therefore the greater part of the loss will fall on them.

The New River Sandstone Brick Co., has been incorporated at Bramwell, W. Va., with a capital stock of $100,000.00, to make sand-lime brick. The incorporators are: H. S. Brown, of Bramwell, W. Va.; J. E. Jones, Switchback, W. Va.; Edwin Mann, Bluefield, W. Va.; Harry Bowen, Bramwell, W. Va., and Wyndham Stokes, Welch, W. Va.

From Our Own Correspondents.

GREATER NEW YORK.

NEW YORK, N. Y., August 22.—There has been but little work done for the past month. A tour of the offices in the trade shows conditions akin to a general vacation time. But matters are being gradually whipped into good shape. The different bodies forming the Board of Building Trades (employes) have gone over to the employers' plan of arbitration till but the Horsesmiths' and Bridgemen's union (Samuel Parks' union) were left outside. There has now been such an off-shoot from them into a new organization, that the employers feel themselves justified in saying they will soon be ready to go ahead utterly regardless of Parks and his remaining constituents. This, coupled with the conviction of Parks for extortion, would seem to presage a complete settlement of the question, with a prospect of an immediate resumption of work on a basis satisfactory to all. There has been very little movement in supplies and almost no change in prices.

Mr. Boise, of the Associated Lime Companies, quotes Jointa at the same figures as last month, and says that in the exchange there is no change in prices, but that there is a very buoyant and hopeful feeling consequent upon the expected general resumption of work.

Mr. James Wotherspoon, of the Wotherspoon Plaster Mills, in a review of the market, said that trade has been very fair considering all the adverse conditions, but prices have not been quite satisfactory. Figures have been cut $1.00 and subsequently $1.50 per ton, which price prevails yet, but a material stiffening is looked for soon. Referring to the manufacture of plaster, Mr. Wotherspoon said that although new methods of lime making are coming to the front, the old method still holds as to plaster. But, notwithstanding that the processes are all old and well known, the State of New York is dotted with monuments of failure in the plaster business. The reason of it is that the proprietor too often does not attempt to acquire a practical working knowledge of the business. It is dirty, hot, sticky and unpleasant generally, and he shirks the uncongenial job of putting on blouse, overalls and cap, and getting into the brunt of it, but leaves all that to the men who go about it in the perfunctory way naturally to be expected of them, working along mechanically without any thought below the surface, turning out one kettle satisfactory and the next not so, but not troubling themselves to find out why one has resulted differently from the other. But were the proprietor to go right into it himself and study it all out, the average of success in plaster making would be higher. It may be truthfully said that there is no one in the business more practically and thoroughly acquainted with the natural conditions of the gypsum industry in this country. All his raw material comes from Nova Scotia. He has made many trials of domestis gypsum without success. Most of it is not suitable, and some that is of fair satisfactory quality is handicapped by freight charges from an entrance into this market. However, Mr. Wotherspoon is constantly studying the native deposits, and he says there is no doubt that some day a satisfactory and profitable gypsum belt will be struck near enough home to amply supply this market.

Mr. T. D. Cone, of the National New Process Lime Co., 39 Cortlandt Street, New York, is in town after a run through the upper part of the State. The lime industry is in a good, healthy condition, the trade at Watertown not being very much affected by the strikes here. At Glenn's Falls they are a little more affected by conditions here, but nevertheless things were running very well up there.

At the office of the Northampton Portland Cement Co. and Quaker Portland Cement Co., they report trade to be good notwithstanding the building dullness. They anticipate that next year the demand will be phenomenal, with an opening for the foreign cements. The work on their new mill has stopped for the present, as the contractor has employed New York labor which has been affected by the stoppage here. Their intention is to make this the most complete and up-to-date mill in the country. No untried experiments will be installed—only what has been tried and proved effectual, to the arriving at of which no expense has been or will be spared.

Mr. N. F. Palmer, president of the Noyes F. Palmer Manufacturing Co., making cast-stone adjustable presses, was much pleased with the little editorial in the August ROCK PRODUCTS urging harmony amongst the makers of cast-stone presses. He said they were wise words and it would redound to the general benefit if they were properly heeded. "But truth and facts will eventually win out," said he, "and when that time comes the whole subject will be flooded with a daylight which will render the situation absolutely free and clear of all possible doubt or confusion."

Mr. Palmer said it was very important that the mind of the trade should be set right on this subject, and it would be a suitable mission for ROCK PRODUCTS, with its admitted fairness and impartiality on the subject, to use its influence to bring about that end. There is such an immense field for the machines that their use should not be hampered by so many misgivings. In all forms of building material, granite, marble and so on, its great usefulness consists in the utilization of tailings, screenings and refuse matter generally that no sufficient commercial use has yet been found for.

The cardinal principle of success in the industry is to have a perfectly smooth and impervious faced and tightly fitting mould. It must be absolutely firm and rigid so that the homogenious amalgamation and setting of the particles is never once interrupted right through to the finish. With these conditions and with the requisite quantity of moisture closely confined till it has performed its necessary part in the process, and with the steady and uniform tamping, the fat of the cement is coalesced with the water and worked down and against the smooth, tight and impervious sides of the mould till an impenetrable skin is formed which will resist weather and shed water like glass. Then the press must work so true and respond so perfectly to your plans that the first block will be just what you designed and every succeeding one will be an absolute fac-simile.

Gabriel & Schall, 205 Pearl Street, have practically gone out of the cement business, having found their preparation of Precipitated Carbonate of Barytes so popular that they are devoting their time mainly to that article. They claim that it is a positive preventative of the unsightly scum and discoloration, otherwise efflorescence, so commonly seen on brick and terra cotta walls. It has been brought down to a reasonable price per ton for brickmakers and terra-cotta manufacturers, and if used according to their directions, they say that it is an effectual remedy for that trouble.

Mr. Leonard, of the Automatic Weighing Machine Co., Jersey City, reports very gratifying progress with their machines among the lime and cement manufacturers. They are getting extensively in use in the above trades, owing to their accuracy, and quickness and ease of action.

Mr. Kimball, of the Kent Mill Machinery Co., says that business is very satisfactory in the phosphate fields and is holding up about as well even now as at any time during the year. Their mills for crushing the phosphate rock are increasing in popularity and they are kept busy to equal the demand.

At the office of the Lunkenheimer Co., 26 Cortlandt Street, Mr. Jupp reports that business is very good, notwithstanding the long strike and stoppage of work, as there are so many uses for their products outside of construction lines. Mr. Jupp says that they are running about 90 days behind on orders which have come in far beyond their immediate capacity.

Mr. N. C. Byers, New York agent of A. B. Farquhar Co., of York, Pa., portable and stationary engines and boilers, reports an extremely gratifying state of affairs, to the effect that they have their hands full, but with the drawback that they have not yet been able to catch up with the volume of their orders and are now 80 engines behind but they hope soon to remedy that condition of things and catch up with their orders again.

Mr. Fletcher, of the Sayre & Fisher Co., fine front bricks, 207 Broadway, says that business has been unusually good, considering the disturbed conditions; far better than could possibly have been expected. Prices might be better, as there has been some hammering done in that respect, but no more than might have been looked for under the unusual conditions. Everything points to a very good trade when the labor troubles are settled.

Mr. J. R. Alsing has removed to 136 Liberty Street (as was noted last month) and is now located in the same building with this paper. Mr. Alsing is much pleased with the change, especially as the very first letter he opened after arriving in his new quarters, contained an exceptionally good order for his crushing machines, which Mr. Alsing very naturally hailed as a good omen.

SYRACUSE.

SYRACUSE, N. Y., August 20.—The feature of the market is the plentiful supply of cement and the consequent fall in prices. Building trade troubles throughout the State have caused the amount of building to fall off greatly. Some of the Syracuse cement dealers who bought up a large supply of cement on the strength of rising prices, have lost thousands of dollars on account of the drop. There is a good demand for lime and plaster and the prices have not been affected materially. Brick are stronger, if anything, and none of the manufacturers have made any more than they can sell. The wet weather has been unfavorable to brick makers.

Negotiations have been pending for the sale of the mills and about fifty acres of marl land owned by the Warners Portland Cement Co. to Mohawk Portland Cement Co., of New York, and a mortgage has been filed at the County Clerk's office for $150,000.00 to the Guardian Trust Co., to secure a bond issue. The Warners Co. went out of business a few years ago. The Mahawk Co. was formed to take the property over. Thearon B. Dean, of New York, is president of the company, and John Jenkins, of New York, is secretary.

Charles C. LeRoy, a geological expert of the National Department of Agriculture, is here to investigate mines and quarries in that part of New York State just West of Onondaga, Cortland and Broome Counties. The rest of his investigations will be given out in a report to be issued later.

Robert Dunlop died at Jamesville, August 14. None are better known in the cement, lime and plaster trades than were his father and himself. Robert Dunlop, Sr., came here from Scotland and started and operated, until his death, extensive manufacturing and quarrying interests which contributed largely to the building up of Jamesville. He established cement, lime and plaster works, a grist mill, a sawmill and an oil mill. The father died in 1882 and the son took up the work. At the time of his death Mr. Dunlop owned some 800 acres of land in and about Jamesville, lime and plaster quarries, flour and barley mills and other interests. At one time he shipped annually 2,000 tons of plaster and 100,000 bushels of water lime.

There were over 3,000 potters at the annual picnic of the Onondaga Pottery Co. August 16, at Long Branch. One of the features was the cup breaking contest at which several thousand cups were broken.

The Clark Stone Quarry Co., situated for many years at Oxford, N. Y., will move to Norwich, N. Y., on account of the better business facilities afforded there.

It is stated that the old lime kiln coal pits are to be reopened at Oneida, N. Y. These pits have been idle for fifty years. Coal was mined from them, but not of good quality, and they were abandoned. Six months ago an expert from Wilkesbarre, Pa., examined the pits and found that by going deeper, coal of first class quality could be obtained.

CHICAGO.

CHICAGO, ILL., August 22.—The Artesian Limestone Co., of this city, has recently bought a large tract of stone land at Sag Ridge, Ill., on the Drainage Canal. It is said they expect to erect a model plant at that point, making it the most up-to-date stone crushing plant in that locality. As they are very successful and experienced in the business they will likely make a success of this new venture.

The Brownell Improvement Co. has purchased 35 acres of quarry property adjoining their Thornton plant, and it is supposed will proceed at once to improve it by putting in a new crushing plant. They do a large contracting business in addition to selling crushed stone, and their present plants are inadequate to meet their requirements.

Mr. Edward Hely, of Cape Girardeau, Mo., and Monon, Ind., was in town the other day. He re-

ports business good at each of his quarries. At Monon he is running on broken stone for road work, and at Cape Girardeau for the L. N. Co. Difficulty in getting plenty of good labor is the only drawback he is meeting with at the present time.

Mr. Charles Crooke, of the Bessemer Limestone Co., Youngstown, Ohio, was in town last week looking up stone crushing machinery. He is one of the largest producers of broken stone in the United States, and has several large crushing plants in the neighborhood of Youngstown, from which he furnishes fluxing stone to the iron furnaces, as well as ballast and railroad ballast and macadam stone. He also has a model brick plant. He represents a very prosperous and progressive company and has a legion of friends.

Concrete is coming more and more into use in this city with each passing season. A cement structure, the first of its kind on the Lakes, is now being built here, and will extend from Madison to Randolph Street, an entire block. It will cost $100,000.00. With a thickness of sixteen feet on the bottom and an upper face eight feet in depth the big concrete wharf will resist the attacks of the biggest steamers. The wharf is being built forty feet back from where the river now runs. When the wharf is completed the intervening earth will be dredged away and the river thus widened. In building it the contracting company will prepare foundations for a new bascule bridge at Washington Street. The concrete work will be erected on a pile foundation twenty-two feet below the surface of the river. The work as it progresses is attracting a good deal of attention from men interested in concrete.

The large marble business of the Davidson Bros. has been greatly interrupted during the past ten days by a strike. The firm have finally settled their troubles by agreeing to unionize their plant.

Some time ago I mentioned in one of my letters that vast quantities of limestone dust accumulated at the quarries, and that the owners were anxious to find a way for its disposal. They found a way sooner than they expected. It is said on good authority that the limestone dealers have made good profits by selling this waste of dust to the city, where before they had to pay teamsters to cart it away.

BIRMINGHAM.

BIRMINGHAM, ALA., August 21.—It is admitted that for its size and age Birmingham to-day affords a stronger and more active market for stone, sand, lime and cement than any other place in the country. Dealers in the commodities mentioned state without the least hesitation that the demands here are heavy and that great quantities of all things mentioned are being brought in steadily. H. Lee Harvey, representing the Southeastern Lime and Cement Co., main office in Charleston, S. C., with stock at Norfolk, Newport News, Wilmington, Charleston, Savannah, Pensacola, Mobile and New Orleans, was here recently and he reiterated the statement above made. He stated that the Birmingham market was indeed a strong one and the prospects are still very active.

The owners and operators of the Southern Cement Co. plant at North Birmingham, Daniel Pierson, Jr., president, and H. R. Sanson, general manager, have purchased the coal mines of the Cahaba Southern Mining Co., located in Bibb County, Ala., and are operating them.

The Attalla (Ala.) Stone Co., recently incorporated by local parties with a capital of $20,000.00, has already started work in their quarry near Attalla. The company has a large lime rock deposit that analyzes 98 per cent. pure lime, and it is claimed that there is no better to be found in the State.

The plant of the Southern Sewer Pipe Co., manufacturers of soil pipe, being erected at North Birmingham, is being rushed and will be ready for operation before September 10. This plant was destroyed by fire several months ago and is now being rebuilt. It is understood that the greater portion of the product is to be sent to New Orleans for use in the sewerage system being established in that city.

The Birmingham City Council at their meeting August 19, let a contract for a large amount of artificial stone sidewalk work. Byron & Sauders received the contract and will begin on the work in the next few weeks. This firm has already put down much artificial stone sidewalk in Birmingham.

The Birmingham Contracting Co. has succeeded the H. E. Manville Paving Co. and is continuing the business of the latter. F. M. Jackson, who is president of the Birmingham Commercial Club and also president of the Blocton Cahaba Coal Co., is president of the Birmingham Contracting Co., with R. R. Callen and J. J. Honeycutt in immediate charge of the company's business. This company is doing grading, cement sidewalk work and similar contracts.

The City of Birmingham has an ordinance in hand looking to the paving with vitrified brick of Second Avenue between Seventeenth and Eighteenth Streets, a most important block in the city.

The Alabama Sand and Supply Co. and the Birmingham Sand and Brick Co. both are enjoying exceptionally fine patronage and in some instances delays are reported in delivery.

Montague & Co., of Chattanooga, Tenn., are shipping a good quality of fire brick and soil pipe to this market at present. The Stevens Pottery Co., of Macon, Ga., are sending some fire brick here also, while common brick is being brought in from Chattanooga, Tenn., and from the Bickerstaff Brick Co., of Columbus, Ga. The Jefferson Brick Co., which includes almost all of the common brick manufacturers in the immediate Birmingham district, is doing a tremendous business and is finding sale for almost its entire output right at home.

The Carolina-Portland Cement Co., which has an office in Birmingham, operating under a local charter, is handling the entire output of the Southern Cement Co., manufacturers of cement from blast furnace slag at North Birmingham.

MEMPHIS.

MEMPHIS, TENN., August 24.—The trade here in rock products, lime, cement and asphalt wares is quite good this summer and reputed to be above the average. This is due to the good building record Memphis is having within her limits and in the suburbs. Also the immense amount of paving and graveling work going on in her suburban portions and on the county highways of Shelby.

The Wright Lime and Cement Co. is one of the pioneer concerns here. Steve M. Wright is regarded as an authority on those products and he has built up a good business in the Memphis district. He has an office and warehouse at 384 Second Street, and large yards at 471 and 473 Main Street. He carries in his stock plaster, cement fire brick, flue pipe, Louisville, Rosedale and Portland cement, fire clay, sand, chimneytops, building brick and sanitary lime.

Morriss Bros. do a good amount of monumental and building stone work about here in marble and granite. They have a plant on Broadway and a downtown sales place on Main Street. In several local competitions they carried off the prizes.

Wm. A. Underwood, whose works are at Broadway and Mississippi Avenues, is an importer and manufacturer in marble and granite monuments and statuary, and makes something of a specialty of interior work in these lines.

The Kastner Cut Stone Co. have put on the building market of Memphis some innovations in fine cut stone work. Their products have been shown to advantage recently in the new city hall at Vicksburg, Miss., in the Memphis Telephone Building and in the residence of Memphis' merchant prince, E. Lowenstein.

J. A. Cunningham and D. R. Wilson have made some rich discoveries of phosphate on Indian Creek near Centreville, Tenn., within the past few days.

Cracked stone of the macadam variety is arriving in Memphis now at the rate of twenty cars a day, to be laid on Union Avenue, the fashionable residence boulevard, the longest residence place in Memphis. This stone being received here comes from the Chickasaw Stone Co., whose place of operation is about ninety-six miles from Memphis on the Frisco Railroad. The proprietors are Memphis men and they have a pretty large stone crushing business. The quarries are between Black Rock and Imboden. The rock used is a cross between a limestone and a granite. Hugh Petitt is president of the company. S. M. Williamson, vice president, R. F. Sloan, secretary and treasurer.

Capt. C. M. Henley, of Columbus, Ohio, has been in Tennessee this week visiting a new plant started by his company at Friendsville, Blount County, Tenn. Capt. Henley is president of the Tennessee Variegated Marble Co. He thinks the Tennessee plant will be ready for operations in a very few days.

The capitol commissioners of Arkansas let the contract for the State Capitol to Caldwell & Drake, of Columbus, Ind., for $947,846.00. The building will be constructed of Batesville, Ark., stone, which will be furnished by the Pfeiffer Stone Co.

Granite.

QUINCY.

QUINCY, MASS., August 23.—The aftermath of the joint love feast between the local manufacturers' association and the Barre granite men has been garnered and trade is proceeding in its accustomed way. The subject of an association between the granite manufacturers of the East, which was broached at the late reunion, may yet bear fruit. The matter has been left to the executive committee of the local and Barre association. A meeting will be arranged at some previous date when the feasibility of such an organization will be thoroughly discussed.

Trade at present is all that could be desired. The manufacturers and quarry owners are busy. The work at hand is small in its dimensions but of such quantity that conditions augur well for a prosperous fall and winter season.

Thomas & Miller have received word from the Boston agent of the Star Union line of the Pennsylvania railroad, allowing their claim for $7.00 by reason of goods shipped by them arriving at its destination much quicker than they anticipated. The claim was a unique one and without parallel in the history of railroads. Mr. Miller figured on the shipment of granite arriving in London, Ontario, in about two weeks. Instead the cargo arrived in four days time and the firm was obliged to pay demurrage charges of $7.00. Mr. Miller put in a claim for that sum which has been allowed.

Following is a partial list of granite men to visit the trade during the month past: H. J. Bowers, Barre, Vt.; Harry Peverley, Philadelphia, Pa.; Hance White, Pittsburg, Kansas; W. Wentz, Kutztown, Pa.; Wm. Gray, Philadelphia, Pa.; Geo. Morrison, Biddeford, Me.; Mr. Davis, of Davis Bros., Worcester, Mass.; E. C. Maps, Yonkers, N. Y.; John N. Reed, Keene, N. H.; J. W. Altemus, Clinton, N. J.; Mr. Fuller, of Fuller & Winslow, Nashua, N. H.; J. F. Regan, Taunton, Mass.; Mr. Goldsmith, of Goldsmith & Benswinger, Brooklyn, N. Y.; Felix Bovia, Woburn, Mass.; C. H. Gaul, Chicago, Ill.; C. H. Nott, Freeport, Ill.; Mr. Rapallee, Sioux City, Iowa; Mr. Anderson, of Twombley & Anderson, Des Moines, Iowa; H. C. Moody, Cedar Rapids, Iowa; Dunston Carlson, Lowell, Mass.; Edward B. Doran, Dallas, Tex.

The annual meeting of the Granite Manufacturers' Association, was held August 11, when the following officers were elected: President, Harry S. Nicoll; vice president, Thomas F. Mannex; treasurer, James Joss; secretary, Thomas J. Dunphy. Executive committee: Harry S. Nicoll, T. F. Mannex, James Joss, J. C. Murray, W. T. Spargo, P. W. Driscoll, Henry McGrath, Philip Cook and P. T. Fitzgerald. Membership Committee: Thomas W. Smith, John A. McDonnell, Robert Mavers, George Clarke and P. W. Driscoll.

Returns from the three railroad shipping depots show that the total amount of granite shipped during July was 12,238,817 pounds, an increase of more than 2,000,000 pounds over the amount shipped in June. July figures were: West Quincy, 6,579,822 pounds; Quincy Adams, 4,643,495 pounds; via The Quarry Railroad, 1,015,500 pounds. Total, 12,238,817 pounds.

BARRE.

BARRE, VT., August 25.—Business in Barre seems to be moving along nicely, in fact, showing an increase over last month. One of the nice features of the business at present is in the fact that quarry operators can get prompt deliveries, and this makes smooth sailing for the manufacturers, and makes business more satisfactory all around. Of course it is nice for quarrymen to have enough orders booked ahead to know that they will be busy for several months at least, and the man who is accustomed to having a book full of orders may feel a little shaky at times when his production is running neck and neck with the demand, but as long as there is plenty to do it makes good busi-

ness, and it is certainly more satisfactory to purchasers of rough stock.

Among the Barre men who have enjoyed an outing this summer, Alex Innes of the Innes & Cruikshank, and Donald McDonald, of Donald & Buchan are to be numbered, for both took a trip to Scotland.

Jones Bros. have completed a new addition to their plant, and this new addition, which is in itself 192x40 feet wide, it is said, gives Jones Bros. the largest granite manufacturing plant in the world.

If all the wings to the plant were placed end to end, it would make a shed 750 feet long and varying from 40 to 65 feet in width. This does not include machine shops, boiler room or office buildings. This cutting plant has a capacity of 13 gangs of 14 cutters each, or a total working force of 260 men. With 100 men employed on their quarries Jones Bros. will have a force of 360 men. The addition will accommodate three gangs of cutters. The addition, which contains all the latest conveniences of a straight line shed, was erected by C. L. Bugbee.

The firm of Jones Bros. is an old one, having been in business for nearly 21 years, 17 of which it has been in the manufacturing business in Barre. The firm started here in a modest way with two gangs of men, but has enjoyed a steady growth of business and prosperity. On June 1 of the present year the brothers who make up the firm were incorporated under the laws of Maine as the Jones Bros. Co., capital stock $250,000.00, all paid in. The officers are: President, M. W. Jones; vice president, H. J. M. Jones; secretary and treasurer, S. W. Jones. The company has offices in Boston, Chicago and Aberdeen, Scotland.

There is hardly any season of the year when the company has not in process of cutting as many as a dozen mausoleums or vaults, as well as a great many monuments. One of the largest monuments now being cut by them is the Ohio State soldiers' monument, to be erected at Chattanooga, Tenn. When completed and erected it will have a total height of 80 feet. It has two spires, one 3.10x3.10 x32 feet and the other 4.6x4.6x22.6.

This spire weighed 48 tons in the rough, but was lifted from the car at the shed as easily as one weighing one ton. The company is also cutting three State monuments for Iowa, the largest one being 72 feet in height. These are for Chattanooga.

The papers have recently had much to say about the wonderful columns that are to form a part of the structure of the new St. John the Divine edifice. These columns are quarried in Maine and taken to New York by boat. The contract for moving them from the boat to the building site and erecting them was awarded to Jones Bros. Co. They have had constructed a special wagon for the purpose. Its wheels are of solid oak 40 inches in diameter, with 8-inch rolled steel axles. The columns to be moved and erected are 12 in number, two pieces forming one column. Six pieces are 24 feet in length and six 38 feet in length. All are six feet in diameter. After being hauled to their destination they will be set up by their superintendent, W. F. Howland, of this city.

J. B. Corskie & Son are among the busy men of Barre these days, and have orders in hand from different parts of the country in plenty to keep off worries for some time.

Robins Bros. also seem to be enjoying all the trade they can take care of.

Beck & Beck recently started in quarrying at what is known as the Beck & Lagor quarry. They are getting out a very nice light Barre granite, and have been having all the work they could handle.

Dan Smith, of E. L. Smith & Co., was so busy that he did not get to go on that trip down to Quincy.

The General Crushed Stone Co., with main offices at South Bethlehem, Pa., is equipping a stone crushing plant of 1,000 tons daily capacity near Doylestown, Pa.

A. Cosmo Little has bought the fertilizer plant of Little Bros., South Jacksonville, Fla.

The E. O. Painter Fertilizer Co. will erect a fertilizer plant at Jacksonville, Fla., to cost about $100,000.00.

H. D. Rhum, of Mt. Pleasant, Tenn., is said to have purchased phosphate land near Trotty's Bend, in Hickman County, containing valuable phosphate deposits.

The phosphate industry of Tennessee will be properly represented at the St. Louis Fair, according to plans now in hand, which are for an elaborate exhibit of this product.

Fertilizers.

Quarrying and Preparing Phosphate Rock in Tennessee.

The phosphate industry presents some peculiarities not found in any other stone lines, not only in quarrying, but also in the process of preparing for market. The quarrying, in the Mt. Pleasant, Tenn., district, is simply surface mining, and reminds one more of the process of stripping and making ready to begin operations in the building stone lines. There is a stripping, generally of soil and clay, to be taken off before the actual work of quarrying phosphate begins, the stripping varying from a thin soil stripping of only a few inches, to an over burden in some cases of 10 or 12 feet. Then, after the phosphate rock is reached, there is a deposit varying in thickness from 18 inches to 18 feet, which consists of loose or detached boulders and chunks of phosphate rock, bedded in clay. The rock would not appeal to the eyes of the uninitiated as being of material value, for it is a soft, dirty porous stone, of irregular shape, and ranges in size from small gravel to good, big chunks of boulders, which are indiscriminately mixed up in the clay bedding.

The method of procedure in getting out this phosphate rock and putting it on the market differs so much, both mechanically and from a business standpoint, that it is rather difficult to give a general outline that will apply. Most of the deposits are found on good farming land, and while sometimes these farms are bought outright by the phosphate people for the rock, it seems that more generally it is mined on a royalty basis, and this royalty varies all the way from 20 cents to $1.25 a ton. Sometimes a contract to mine phosphate also involves restoring the land to proper condition for cultivation again, after the phosphate has been taken out. After the phosphate concern has arranged for its phosphate land it is quite common then to let a contract to some man to quarry this rock and deliver it alongside the railroad. It is said, however, that the progressive concerns are finding this method not entirely satisfactory, as it is not conducive to a close clean up of the material on the land.

In the process of quarrying it seems to be a practice to open up in pits, which vary in sizes, but will average probably 60 by 300 feet in surface dimensions. The first step, as stated above, is to strip off the overlaying soil and clay, and then after the phosphate bearing ground has been reached, the rock is gathered up by picks and by hand, pretty much after the manner of stripping dirt and loose rock from stone quarries preparatory to opening up for building stone. As the rock is taken from the ground it is spread out on the most convenient plot of ground adjoining the workings and allowed to dry to get rid of some of its moisture.

Such is the crude way of doing the work, but progress is the order of the day now, and artificial drying is coming to the front; also washing. All of the stone mined does not require washing, but there is quite a lot of it, that in order to raise it to the grade required for export, must be washed and then dried. For example, the Tennessee Phosphate Co. has rock on certain fields that requires washing and then drying. In this process, as the rock is taken from the field it is put through crushers first to reduce it to the proper size, and then it goes through a cylindrical washer. This washer uses about 450 gallons of water in ten hours and washes 65 tons of rock, about two-thirds of which is export and one-third domestic rock. They have two of these washers, which gives them a capacity of about 130 tons a day. The rock is crushed before washing to pass through a 4-inch ring, and after washing it is screened to take out the finer particles which go to the domestic trade and leave the coarser rock for export.

The rock from the washer is handled automatically by dump cars to the drying shed. For drying in these sheds, wood is laid to a depth of from 2 to 3 feet, and the rock is piled up on top of that 10 to 15 feet deep, after which the wood is set on fire to dry out the rock. This is a very simple method of artificial drying, and is said to cost from 25 to 30 cents a ton, and it is thought this can be improved on; in fact, one man claims to have a design for a kiln, something on the principle of a modern continuous lime kiln, that will dry this rock for about 8 cents a ton.

Among the developments of the past year along this line has been the saving of the waste product from these washing machines. It was discovered that the waste contained quite a large per cent. of phosphate, and some very successful efforts have been made along the line of utilizing it. Settling tanks were put in to catch the rock portion of the waste, and then a Turney sand drier was installed, by which the waste product is saved and put into cars at a cost of about 9 cents a ton; and as this washing represents about 40 per cent. of the product, it means 40 per cent. saved at only a cost of about 9 cents. The product from this waste is just as good a product as the coarser material, but it is objected to on account of being fine; still it is said to sell readily at about $2.25 a ton, and when we figure that one Turney drier will take care of from two to four tons of this in an hour, it looks like a good proposition.

The production of phosphate in Tennessee has been increasing enormously in the past six years. It did not increase in quantity last year over 1901, but there was an increase in price, which more than made up for the loss in the quantity. The report of production by sales for 1902 amounted to 390,799 long tons, valued at $1,206,647.00, as compared with 409,653 long tons, valued at $1,192,090.00, in 1901, a decrease in quantity of 18,854 tons, although the value showed an increase of $14,557.00. The quantity of phosphate rock mined during 1902 was 396,015 long tons, valued at $1,210,673.00. Now, with Tennessee coming to the front with improved methods, too, we may expect to see things pick up quite a lot more by the end of the present year.

When the rock is put on the market without going through the washing, it is simply put through a Gates crusher to reduce it to the proper size and then screened. What is known as export rock, is that which carries the proper per cent. of bone phosphate of lime, and of such a size as will pass through a three-inch ring, but not through a one-inch mesh screen. All that will pass through a one-inch mesh, and above that which will pass through a three-eighths inch mesh is classed as domestic rock. The fine screenings are put through pulverizing mills and ground fine and put on the home market.

Phosphate Rock in 1902.

The report on the production of phosphate rock in 1902 by Dr. Joseph Struthers is now in press for publication as part of the United States Geological Survey's volume on Mineral Resources for 1902.

The phosphate rock industry in Florida and South Carolina is gradually recovering from the setback it received in 1900. In Florida the decrease, as compared with 1901, in the production of hard rock and river pebble was more than compensated by the large increase in the quality of land pebble produced, though there was a decrease in the total value of the product. In South Carolina there was a slight decrease in both quantity and value; and in Tennessee there was a slight decrease in production and a slight increase in value of product. It should be borne in mind that the marketed output rather than the rock actually mined is made the basis of the report on production of phosphate rock.

The figures for 1902 and 1901, respectively, are as follows: Florida, 785,430 long tons, valued at $2,564,197.00 as against 751,996 long tons, valued at $3,159,473.00; South Carolina, 313,365 long tons, valued at $919,725.00, as against 321,181 long tons, valued at $961,840.00; Tennessee, 390,799 long tons, valued at $1,206,647.00; as against 409,653 long tons, valued at $1,192,090.00; total production for United States in 1902, 1,490,314 long tons, valued at $4,693,444.00, as compared with 1,483,723 long tons, valued at $5,316,403.00 in 1901, an increase in quantity of 6,591 long tons, and a decrease in value of $622,959.00.

Process of Producing Fertilizer.

The recent patent granted to A. K. Jarecki makes use of beet sugar residues in rather a unique way. The basic phosphate is mixed with sulphuric acid. Alcoholic or syrupy beet sugar residues are then added, together with nitrogenous organic refuse, and the whole allowed to stand until the heat of the reaction drives out the moisture, leaving the granular product.

Clay.

Will Degen and others will erect a brick factory at Farmington, Iowa.

James N. Baker, Kimulga, Ala., is figuring on developing clay property.

The Lancaster (Ohio) Pottery Co. has made arrangements for increasing the capacity of its pottery plants.

The Otsego (Mich.) Brick Co. has been incorporated with a capital stock of $40,000.00 to manufacture brick.

The Montello (Pa.) Brick Works has received a contract for 1,000,000 vitrified paving brick for Washington, D. C.

The Dixon Clay Co., of Pittsburg, Pa., has bought a large tract of clay property from B. F. Trumbo, near Soldiers, Ky.

The Moberly (Mo.) Brick Tile and Earthenware Co. has increased its capital stock from $25,000,00 to $75,000.00.

The Central New York Pottery Co., of Chittenango, N. Y., has increased its capital stock from $60,000.00 to $200,000.00.

The Badger Construction Co., Milwaukee, Wis., has secured brick paving contracts to the amount of $50,000.00, in that city.

The Gem City Paving Brick Co., Quincy, Ill., recently added a new Boyd brick machine with a capacity of 20,000 a day.

The Michigan Peat and Marl Co. has been incorporated at Grand Rapids and Mecosta, Mich., with a capital stock of $250,000.00.

The Brenham (Tex.) Pressed Brick Co. is said to be turning out a fine lot of brick and enjoying a lively demand for its products.

The Chamber of Commerce, of Oneida, N. Y., is figuring with a new concern which proposes to erect a brick plant at that place.

The Ft. Wayne (Ind.) Brick and Tile Co. started up its new plant during the past month with a bright outlook ahead for business.

Fenstermacher & Schwingle, of Danville, N. Y., have been burning a new kiln of brick this past month, containing 200,000 brick.

Arthur B. Nitsh Brick Co., Lansdown, Md., has sold out to John W. Buck and others and will organize a company to continue the business.

The Karlen & Schober Co., a new brick firm at Monroe, Wis., recently begun operations with a new patented brick kiln that holds 65,000 brick.

Conklin Bros., of the Parkville (Conn.) Electric Brick Works, has a contract to furnish a million brick for an addition to the postoffice at Hartford, Conn.

The National Drain Tile Co., Terre Haute, Ind., which had its plant partially wrecked recently by the bursting of a fly wheel, has installed a new engine.

The Thornton Brick Co. is building a plant near Grafton, W. Va., which it is said will be, when completed, one of the largest plants of the kind in that State.

The Evens-Howard Fire Brick Co., St. Louis, Mo., had its plant at Macklind and Manchester Avenues damaged to the extent of $2,500.00 by fire recently.

The Winnsboro (Tex.) Pressed Brick Co. has been incorporated with a capital stock of $10,000.00, to manufacture brick. The incorporators are: C. H. Morriss, Manton W. Jones and S. O. Ashberry.

The Hering Patent Novelty Brick Co. has been incorporated at New Rochelle, N. Y., with a capital stock of $15,000.00, to manufacture patent brick. The incorporators are: George Hering, James J. Hanrahan, Samuel M. Devean, all of New Rochelle, N. Y.

D. E. and H. L. McNicol, East Liverpool, Ohio, have been looking into conditions at Columbus, Ohio, with a view to establishing a pottery plant at that place.

Wilson Bros.' new brick and tile plant at Spencer, Iowa, has begun operations. The plant represents an outlay of $20,000.00, and is said to be moving along very nicely.

The Conococheague Brick Co., Williamsport, Md., has a contract to furnish W. D. Byron & Sons, of Hagerstown, Md., a million brick for the construction of a new tannery.

Reports from Dallas, Tex., indicate that there is raw material available there for making brick, and there is some agitation looking to the establishment of a plant for that purpose.

The Pick Brick Co. has been incorporated at West Bend, Wis., with a capital stock of $45,000.00. The incorporators are: Andrew Pick, Charles M. Mayer and others.

The Iowa Brick Co., Des Moines, Iowa, which lost part of its plant by fire recently, is said to have installed machinery which is to be operated under a tent until the new structure can be built to cover it.

Reports from Buffalo, N. Y., state that the Penitentiary Committee of the Board of Supervisors of that State contemplate equipping a brick plant at the penitentiary to make brick for road building purposes.

The D. and K. Brick Co. has been incorporated at Eagle Pass, Tex., with a capital stock of $10,000.00 to manufacture brick. The incorporators are: Louis de Tulle, W. J. Niggli, Louis F. Dolch and S. B. Simpson.

The Kansas City Brick and Cement Co. has been incorporated at Kansas City, Mo., with a capital stock of $50,000.00. The incorporators are: W. T. Urie, Thomas P. Keyes, Joseph S. Graves and William S. McCall.

The Juniata Brick and Tile Co. has been incorporated in the District of Columbia with a capital stock of $50,000.00. The incorporators are: J. C. Sauserman, J. W. Shatto and W. P. DeLancy, all of Newport, Pa.

The Anna River Brick Co., which has a plant near Munissing, Mich., is turning out 30,000 brick a day with a steadily increasing demand for their product that is causing them to figure on enlarging operations some day soon.

The Castine Manufacturing Co. has been organized at Castine, Me., with a capital stock of $50,000.00, to deal in clay and lumber products. The officers of the company are: George A. Wheeler, president; C. F. Jones, treasurer.

The American Hygienic Brick-Tile and Fireproofing Co. has been incorporated at Richmond, Va., with a capital stock of $1,000,000.00, to manufacture clay products, making a specialty of tile. The brick-tile is the invention of Mr. D. Wiley Anderson, of Richmond.

There has been a reorganization of the Capital City Brick Co., of Atlanta, Ga. A. D. Greenfield has been made president under the new organization, and Max P. Greenfield, secretary-treasurer. The offices of the company are now located at 703 Empire building.

The Robinson-Graves Sewer Pipe Co., of Urichsville, Ohio, has taken out a West Virginia charter with a capital stock of $100,000.00. The incorporators are: M. R. Robinson, C. L. Graves and C. D. Graves, of Urichsville; W. H. Bergen and Corine S. Bergen, of Toledo, Ohio.

The Colonial Tile Co., Tiffin, Ohio, has been incorporated with a capital stock of $1,000,000.00, to manufacture and sell wall and floor tile. The incorporation is under New Jersey laws, and the incorporators are: Amandus Beitts, Louis Selle and Edmund F. Meyers, all of Tiffin.

The Ross-Keller Triple Pressure Brick Machine Co., of St. Louis, Mo., have just made the sale of a complete four-mould brick plant equipment to the Vista Hermosa Sugar and Mercantile Co., Viata Hermosa (Paso de Jali) Oaxaca, F. C. V. C. al Pacifico, via Cordoba, Mexico. Shipment has already been made and the machinery will be installed within the next few weeks and ready for operation by October 1. The Ross-Keller Co., already have a number of their triple pressure brick machines in operation in Mexico, all of which they say are giving the very best of satisfaction.

The Somerset Brick and Pottery Co. has been organized at Somerset, Ohio, with a capital stock of $25,000.00, to build a pottery plant. The officers of the company are: William J. Snider, president; J. W. Baumann, vice president; William Gordon, treasurer, and Jacob Mottz, secretary.

The Imperial Brick Co. has been incorporated at Pittsburg, Pa., with a capital stock of $30,000.00. The treasurer of the company is W. O. McNarry, Frick Building, Pittsburg, Pa. Others interested in the corporation are: James A. Richey, J. G. Chalfant, C. G. Kennedy and Robert F. Graham.

The plant of the Standard Fire Brick Co., at Irondale, Ohio, was recently destroyed by fire, entailing a loss of between $20,000.00 and $30,000.00. The company had just finished a new plant and had the machinery in place ready to operate when the fire occurred. The plant is being rebuilt as rapidly as possible.

The Oakland Manufacturing Co., which was incorporated in June with a capital stock of $100,000.00, at Trenton, N. J., is erecting a plant to make enameled building brick. This concern bought out the old Fell & Roberts brick yards at that place and have been refitting it to adapt it to their requirements.

The Louisiana Hydraulic Press Brick Co., Ltd., has been organized at Jackson, La., with a view to building a brick plant at New Orleans, with a capital stock of $100,000.00. The officers of the company are: W. R. McKowen, of Jackson, president; D. W. Pipes, vice president; Frank Herr, secretary, and D. M. Pipes, treasurer.

The Goetz Pressed Brick Co., Mr. Henry A. Goetz, president, New Albany, Ind., has just started their six-mould plant and are turning out a high grade of pressed brick. This plant is equipped with a six-mould Ross-Keller triple pressure brick machine. Mr. Goetz is to be congratulated on having given to the city of New Albany such a promising enterprise.

The Arcencial Pottery Co., of Zanesville, Ohio, has been incorporated with a capital stock of $20,000.00. The new concern recently purchased the old Radford pottery plant, and it is their intention to remodel it and engage in the manufacture of fine art ware. The incorporators are: Jno. C. Gerwick, James Buckingham, Charles G. Dillon, John Lessell and S. M. Pinkerton.

The Ohio and Michigan Paving and Pressed Brick Co., is the name of a new concern formed in the brick field by Michigan and Ohio men to operate a plant at Trimble, Ohio, near Zanesville. Among those interested are: James D. May, James P. Cummiskey, of Michigan, and William H. Blaney, of Ohio. The selling agents will be F. B. Holmes & Co., of Detroit, Mich.

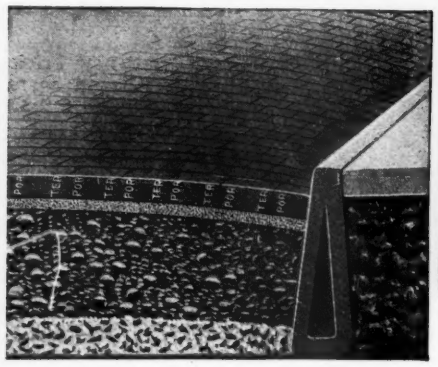
The Ross-Keller Triple Pressure Brick Machine Co., of St. Louis, Mo., have just finished a four-mould plant at Springfield, Ill., for the Lincoln Park Coal Mining Co., being operated by Dr. Samuel P. Boardman and Mr. Otto P. Wenneberg. The plant is averaging over 20,000 brick per day, and, although the first kiln has not yet been fired, a very high grade product is assured.

The plant of the Hanover Brick Co., the successor of the Moore Brick and Clay Co., Hanover, N. Y., was recently started up under the new management after being overhauled and put in first-class condition. A new outfit of brick machinery supplied by Chambers Bros., of Philadelphia, was put in. In this same locality the New York and Philadelphia Brick Co. have started a new plant.

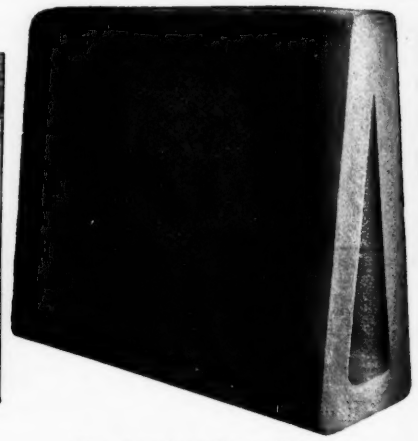
The Ross-Keller Triple Pressure Brick Machine Co., of St. Louis, Mo., report the sale of a complete four-mould brick plant equipment to the Crowder City Mercantile and Investment Co., Crowder City, Ind. Ter., and also a complete four-mould outfit to the Mangum Press Brick Co., Mangum, Okla., with dump cars, winding drum and steel track for gathering clay. Shipment of the machinery is now being made.

Reports from East Liverpool, Ohio, state that the East Liverpool Potteries Co., which is made up of a number of pottery concerns in that locality, is about to go out of business, having sold the Wallace & Chetwynd plant to the Colonial Pottery Co., and it is said that a number of others will be turned over to the original stockholders and operated independently. The combined concern was formed a couple of years ago, and it is said that the move has not been as satisfactory as was expected.

Water Conduit at Hartford, Conn., furnished by the American Sewer Pipe Co., Sockets in the foreground ready for cement—line completed in the background.



Sectional View of Brick Paving with Porter Brick and Vitrified Curbing



The American Sewer Pipe Co.'s Vitrified Curbing.

View of canal between Reservoirs at Hartford, Conn., which was abandoned after the American Sewer Pipe Conduit was completed.

Clay Sewer Pipe, Curbing, etc.

For a long time engineers have been using vitrified clay pipe instead of brick for the construction of sewers, and great satisfaction has been given by the pipe on account of its cleanliness, strength and durability. The use of clay pipe for sewers needs no recommendation, but its substitution for iron pipe for water mains is an innovation.

The city of Hartford, Conn., has set an example to other cities in this line by laying a twenty-four inch water main of double strength vitrified clay pipe which carries water between the Hartford and West Hartford reservoirs. Before the introduction of this conduit line, the water flowed along a canal by the side of a road. This method of transporting the water was open to serious objections on account of the danger of pollution, but the length and size of the pipe line necessary to take the place of the canal, placed the laying of an iron or steel conduit out of the question. The problem was solved, however, in a most satisfactory way by the American Sewer Pipe Co., of Pittsburg, Pa., which put in the twenty-four inch main referred to above, and illustrated herewith. The line is 16,000 feet in length and is capable of carrying more water than was calculated for by the engineer. The crushing power which the pipe can withstand may be judged from a test of a thirty-inch pipe, which withstood a lateral pressure of 27,875 pounds.

The joints were made with oakum, dipped in asphaltic cement, and covered with neat Portland cement. The sockets were made four inches in length and are corrugated so as to make a better joint. When carefully made, these joints are as strong as the pipe itself, one of them sustaining a pressure of 270 pounds per square inch in a test before the gasket blew out. The pipe itself will last forever. No acids will affect it, and the stray electric currents that are rapidly destroying the iron water service mains can work no damage to this pipe.

The loss of velocity from friction is said to be less than is the case with iron pipe because of the smoothness of the surface of the vitrified clay, and for the same reason the pipe line is sure to be much cleaner because no sediment can find lodgement on the sides or bottom in such a way that the velocity of the water will not dislodge it. The small cost of the vitrified clay pipe as compared with iron is also an important factor in its favor when any amount is to be laid.

Another line of production that the American Sewer Pipe Co. invite the attention of the public to is their vitrified paving brick and vitrified curbing. We illustrate herewith a section of street paved with their celebrated Porter block, in which there is also shown their vitrified curbing. The dimensions of this vitrified covering are: length 2 feet, height 18 inches, width at top 2½ inches, and width at bottoms is 7 inches. This curbing is manufactured out of fire clay, salt glazed, and they claim that in this product they have removed all objections made heretofore to curbing produced from clay. This curbing, they point out, requires no skilled labor to set nor stonecutters to trim it down after being taken to the place where it is to be used, and it also supplies a drain, avoiding the frequent necessity of laying a tile pipe under the stone curbing.

Notes on the Clay Industry Exhibit at the St. Louis Exposition.

Among the applications recently received for the Clay Industry Exhibit, which will cover about one-half acre of ground in the Mines Building at the St. Louis Exposition, was one from the Excelsior Terra Cotta Co., of New York, whose works are at Rocky Hills, N. J., and of which Mr. W. H. Howell is manager. This company will execute one of the imposing terra cotta entrances by which access is obtained to this exhibit. As it is one of the through aisles of the building, it will be visible from the extreme end of the building. It is a fine, bold piece of work, and will reflect great credit on this company.

The Beaver Falls Art Tile Co., in conjunction with the Star Encaustic Tile Co., of Pittsburg, have taken one of the alcoves for exhibiting their enameled, encaustic and art tiles in actual use as flooring, wainscoting and as a ceiling design. The exhibit will be gotten up with the idea of broadening the use of fine tile work by educating the architects as well as the public in the effective use of artistic tile work. Mr. F. W. Walker is undertaking the execution of the design, as well as the technical work, and promises to produce a result that will undoubtedly be greatly appreciated by the architects.

Mr. E. Kohler, manager of the Encaustic Tile Co., of Zanesville, Ohio, is considering a scheme for making a working exhibit for showing the large variety of enameled and art tiles that are made by this company. The exhibit will be gotten up mainly for the architects and the tile trade.

The American Terra Cotta Co., of Chicago, have taken a prominent alcove in the Clay Industry Exhibit for showing their terra cotta work for interior architecture. The alcove will be embellished with their beautiful Teco ware, especially some of the recent matt-glazed, soft, green art goods. This company is now producing a most artistic line of art pottery that resembles the famous Grueby goods, but in which they have shown greater originality and beauty of design.

The famous Rookwood Pottery, of Cincinnati, has recently broadened out into the artistic development of interior terra cotta work. They are now executing some large New York contracts in terra cotta, and they have selected a large alcove in the Clay Industry Exhibit to take advantage of this opportunity of placing their new departure before the architects and the general public.

The Great Eastern Clay Manufacturing Works, whose plant is located at South River, New Jersey, in the Amboy clay fields, have taken a large space for exhibiting their different products. They will show a full line of their sewer pipe, electric conduits, fire-proofing and hollow ware.

The famous Sayre & Fisher Co., the oldest and largest manufacturers of brick on the Atlantic seaboard, have taken an alcove to exhibit a full line of the brick manufactured by them at their Sayreville, New Jersey, brick yard. Their brick exhibit will be very comprehensive, from the common or rain drop brick, through the various colors and shapes of stock brick, and a full line of enameled brick.

Side Talk.

A New Rubbing Stone.

There is a new proposition coming before the stone trade in the way of a rubbing stone for polishing marble and granite, known as Perrette's American Rubbing Stone. The stone is produced by the American Stone Co., New Albany, Ind., and while it has been in use for fifteen years, among woodworkers, taking the place of pumice, they have but recently turned to placing it before the stone trade for use in polishing marble. The stone is produced at the Perrette quarry, about four miles out from New Albany, Ind., and while the rough blocks have the general appearance of a bluish-gray sandstone, the stone in reality seems to be a kind of a freak of nature, and the American Stone Co., who controls this quarry, claims to have the only stone of this kind in the country. They claim that this stone is superior to anything that has been put on the market for polishing marble, and cite in support of this statement that the Pickle Marble and Granite Co., 1901 North Broadway, St. Louis, Mo., have tried it thoroughly and find it to be entirely satisfactory, and are using it right along to-day in their marble works.

They also have a number of testimonial letters from marble workers; for example, here is one from Haag & Bates, Fort Wayne, Ind., which we quote as follows: "Having tested your rubbing stone for marble, will say that it is giving perfect satisfaction, and as soon as our stock of red grit is exhausted, we will order some of the above from you."

They have at New Albany a stone sawing plant for sawing this stone up into blocks, and the general size of these blocks is about one pound. They are put up in paper and generally packed 100 in a box. The officers of the American Stone Co. are: Henry Perrette, president; H. G. Ferguson, vice president, and L. B. Perrette, secretary-treasurer.

We have received a copy of the Ingersoll-Sergeant Drill Co.'s 1903 catalogue, which is a beautiful specimen of typographical work. It is most complete, giving not only the full line of their implements and machines, but clear photographs of all the working parts detached, with numbered duplicate part list. The descriptions of the various implements are very clear and concise, so that a buyer can purchase understandingly and with precision from the catalogue. It contains many interesting illustrations of the drills at work in various domestic uses, and also for gold mining purposes in Australia and South Africa, the latter with Kaffir help, and Russia as well. The list comprises also, compressors, mine lamps, steel sharpeners, reheaters, air lifts, blasting apparatus, etc.

We have received a program of a recent annual outing of the Lunkenheimer Co., Cincinnati, Ohio, tendered by the company to its employes at Woodsdale Island Park. About 700 employes and their families participated in this outing this year, making 2,000 people all told. There was an elegant program and everything was furnished by the company, including refreshments, music, dancing, etc. This annual outing is a great day with the Lunkenheimer people, for that is a day on which employer and employes mingle together, forget their business cares and play as if they were children. It does much to bring the man that works and the man that pays in closer and more harmonious touch, and of course therein helps to maintain the high standard of the line of steam specialties produced by this concern.

George N. Holland, Factory Agent and Manufacturers' Distributor, corner Fifteenth and H Streets N. E., Washington, D. C., is sending out some interesting literature concerning granolithic asphaltum fibre ready roofing. The circular not only tells about the quality of the material, but gives prices and directions for applying same, and also tells about roofing paint, the kind that sticks everywhere.

Mr. M. T. Geake, son of Wm. Geake, proprietor of the Geake Steam Stone Works, Ft. Wayne, Ind., met with a serious accident while operating a stone planer recently. His clothing was caught by the machinery in such a way as to draw both legs into the machine, and but for the fact that his father was near, and was able to stop the machine before it started back agiin, he would have been killed. It was bad enough as it was, since the result has been the loss of one leg below the knee. He has almost entirely recovered and will soon be in good health again. The Geake Steam Stone Works have recently added two Lincoln Iron Works gang saws. Mr. Geake claims the distinction of having put in the first one of these saws that came West some thirty years ago at Toledo, Ohio.

"Further Contributions to the Manufacture of Artificial Sandstone or Sand Brick," a paper by S. V. Peppel, read at the Boston meeting of the Ceramic Society, February 1903, is now out in book form. The work of Mr. Peppel along this line is too well known to the majority of our readers to require extensive comment here, and this further contribution to literature on this subject is a companion book to a former publication by him on the same subject, and it contains an addition to the matter published heretofore, the result of later study and experiments. The booklet can be had for 50 cents by addressing S. V. Peppel, 431 W. Main Street, Louisville, Ky., and is well worth the price to any one interested in the study of the sand-lime brick industry.

We have received from Riehle Bros. Testing Machine Co., 1424 North Ninth Street, Philadelphia, Pa., catalogue "G" of the Riehle U. S. Standard Testing Machines for cement, asphalt and concrete mortars, and other building material. This catalogue must be seen to be appreciated, because it has more things in it for and about testing rock products than we could tell you about in a week, and some idea of the string of machines they manufacture along this line can be had from the fact that while this catalogue contains over 50 pages, there is listed in this one only a small part of the machines made by this concern. We judge this, or any other of their special catalogues, can be had on application by any one interested.

The Pittsburg Plate Glass Co. has taken up the manufacture of lime-sand brick out of the by-products of their glass factories, and the first plant of a series that they propose to erect has been completed at Kokomo, Ind. The by-product used in this work is the sand which is used at the glass factory for grinding and polishing, and which heretofore has been carried away as a slush when its work was done and let go to waste. This sand seems to be particularly adapted to the manufacture of sand-lime brick, and we expect to have something more to say in regard to this in the near future.

Carleton Ellis advises us that he has recently moved to No. 30 Portland Street, Boston, Mass., where he has fitted up commodious laboratories for the testing of rock products of all kinds. He says he has lately been developing methods to overcome the "drag" or "pull" experienced in working hydrated lime as plaster, and has accomplished this very successfully.

The Advance Pump and Compressor Co., Battle Creek, Mich., is sending out a unique mailing card with a picture of their Advance Duplex pump. The unique feature of the card consists of a border around this picture made up of miniature reproductions of packages of the various health foods that have made Battle Creek famous.

The Fort Wayne (Ind.) Brick and Tile Co. have just made their first run of brick. Their plant is a modern one, and has a capacity of 30,000 to 40,000 a day. Brick is their only product now, but they intend to take up the manufacture of tile later. The manager of the plant is Barney Barkenstein.

Friedley & Voshardt, 194-202 Mather Street, Chicago, Ill., are sending out a neat little catalogue of their hard metal specialties consisting of art metal ceiling, expanding conductors, roofing material and other specialties along this line.

Wilckes Bros., machinery manufacturers, Saginaw, Mich., issue a monthly stock list of new and second-hand machinery which is a neat booklet worth having by purchasers of machinery in all lines.

We can always tell whether it is hot enough for us now, because The Binns Stucco Retarder Co., Urichsville, Ohio, has made us a present of a nice office thermometer with their compliments.

Information Bureau

A Few of the Direct Inquiries Made to the Office of Rock Products During Last Month.

635.—We are in the market for a 100 h. p. Corliss engine.

636.—I want the addresses of manufacturers of sewer pipe not represented in Connecticut or Massachusetts.

637.—I want information on the concrete question, or artificial brick or stone.

638.—Where can I get machinery to make artificial stone?

639.—We want information relative to granite turning and polishing.

640.—We want information relative to figuring the cost of granite.

641.—We need steel castings.

642.—We are in the market for pulverizers.

643.—We want rock crushers.

644.—We are in the market for stone machinery.

645.—We want wire rip saws.

646.—We wish to negotiate with brick and tile manufacturers with a view to making contracts to furnish us large quantities of radial, vitrified blocks of special design, colors, red and buff; we to furnish dies.

647.—We are in the market for terra cotta.

648.—We want Portland cement.

649.—We are in the market for asphalt roofing.

650.—Where can we get centrifugal pumping machinery?

651.—We want dump cars.

652.—We need rock drills.

653.—Where can I get a preparation that will remove moss and stains from granite without discoloring or injuring the stone?

654.—I want the address of some one who operates quarries of Esopus stone for millstones.

655.—I would like the addresses of manufacturers of machinery for working slate.

656.—We are in the market for second-hand core drilling machinery, and would like the names of parties who do this work by contract.

657.—An experienced lime burner can secure an excellent position by addressing this number.

658.—We are in the market for small second-hand rubbing bed.

Wanted and For Sale

One insertion, 25c a line; Two insertions, 50c a line; Three consecutive insertions with no change in the composition, 56c a line. Count eight words to a line; add two lines for a head.

WANTED—HELP.

LIME BURNER.—An experienced lime burner to take charge of a large plant now being erected; will be ready for operation about October 1; prominent position with one of the best concerns in the country. For particulars address BROOMELL, SCHMIDT & STEACY CO., York, Pa., Manufacturers of Broomell's Keystone Lime Kiln.

GENERAL WORKMAN, FOREMAN AND POLISHER—A good, reliable, sober general workman on both marble and granite; one that can cut, carve and letter granite preferred; also a good reliable foreman, a hustler, one who is familiar with all details of the business and that can use an air brush and is a good draughtsman and designer; also need a good polisher, both in marble and granite that can handle polishing machine; we work ten hours a day. Address, stating wages expected and what you can do. MILLER & CLARK, Americus, Ga.

SUPERINTENDENT—An experienced man to take charge of plant comprising nine kilns, quarries, etc.; references as to energy, and ability to handle labor, required; an opportunity for a first-class man. Address, WALTER S. SHELDON, Prest., Box No. 101, Ridgewood, N. J.

WANTED—POSITION.

A SMALL SUM invested in a concisely-worded description of what you want *right here* will no doubt secure you numerous replies and find that desired position for you quickly.

WANTED—MISCELLANEOUS.

CLAYS—High fire-resisting shale rock in the middle East; plastic, white-burning clay in the South. For requirements, address KARL LANGENBECK, Elizabeth, N. J.

WANTED—MACHINERY.

STEAM SHOVEL.—Complete second-hand steam shovel plant to be delivered by March 1, 1904. Address L. E. SMOOT, Washington, D. C.

FOR SALE—PLANT.

LET US SELL that plant for you. See head of department for rates.

GRANITE AND MARBLE BUSINESS.—Old established granite and marble business; good locality; city of 10,000 inhabitants; only reason for selling, party is seventy years old and wishes to retire. Address GOOD OPPORTUNITY, care ROCK PRODUCTS.

FOR SALE—MACHINERY.

ONE CHANNELING MACHINE—Used but little; two stone saw gangs with all machinery to run them; one 35 h. p. boiler, one steam drill, several horse powers for derricks and other quarry machinery; will sell all or part cheap. Address S. H., care ROCK PRODUCTS.

SEVERAL second-hand Pulsometer pumps, boilers, engines and miscellaneous machinery. Address MASLINS, 165 First Street, Jersey City, N. J.

FOR SALE—MISCELLANEOUS.

EASTMAN KODAKS—Two up-to-date No. 2 Eastman kodaks at reduced prices. Address E. H. D., care ROCK PRODUCTS.

BUSINESS OPPORTUNITIES.

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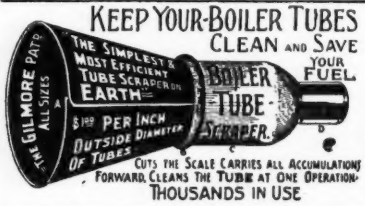
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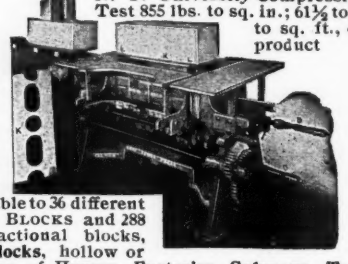

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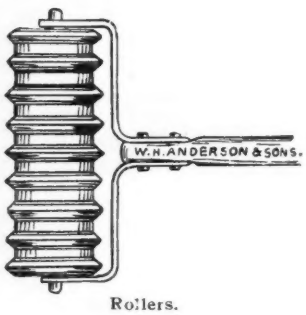

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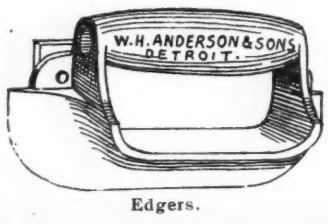

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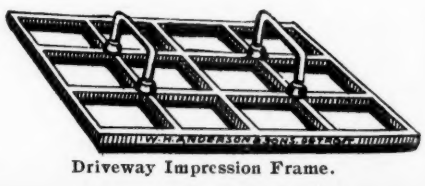

Driveway Impression Frame.